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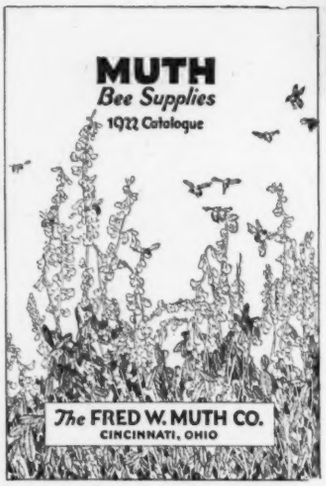
# AMERICAN BEE JOURNAL

MAY 1922

CLASS IN BEEKEEPING AT OREGON COLLEGE OF AGRICULTURE



You need our 1922 bee supply catalog more than ever before. Have you received one? Many new articles are listed for the saving of labor and greater honey production. Our attractive prices, superior quality and prompt service will always be appreciated by beekeepers.

Send a list of your requirements

to us

# THE FRED W. MUTH COMPANY

**Pearl and Walnut Sts., Cincinnati, Ohio**

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# THE DIAMOND MATCH CO.

**(APIARY DEPT.)**

**MANUFACTURERS OF**

## Beekeepers' Supplies

**CHICO, CAL., U. S. A.**

Dadant's incomparable Foundation is always kept in stock. Western Beekeepers can be supplied advantageously.

**EASTERN DISTRIBUTORS**

**HOFFMAN & HAUCK, 1331 Ocean Ave.**
**WOODHAVEN, N. Y.**

BEEKEEPERS, wherever they may be located, before deciding where to obtain supplies, should write to the Diamond Match Co. for prices and for their Beekeepers' Supply Catalog.

This Company are the largest manufacturers in the world who make Bee Supplies. They own their own timber lands, mills and factories, and supply goods direct from the tree to the beekeeper.

Full advantage of this low cost of production is given to the purchaser.

The Apiary Department (which is in charge of experienced supply men, who are also practical beekeepers) maintains a constant excellence of product and offers unsurpassed service.

**ALUMINUM HONEYCOMBS**

The Diamond Match Co. and their agents are the sole distributors in the United States of the Aluminum Honeycombs, manufactured by the Duffy-Diehl Co., Inc., of Pasadena, Calif. Write for descriptive pamphlets. Eastern beekeepers should send their orders for the Diamond Match Co.'s supplies to **Hoffman & Hauck, 1331 Ocean Avenue, Woodhaven, N. Y.**

## DIAMOND MATCH CO., Apiary Department

**CHICO, CALIFORNIA**

BIG SMOKE—WITH SHIELD
FIRE POT, 4x10

WOODMANS FAMOUS BEE WARE

# THE SMOKER
## YOU OUGHT TO OWN

THE most important invention in beekeeping, as little can be accomplished without the Bee Smoker.

The **New Bingham Smoker** is the most efficient and durable machine on the market.

The standard for over 40 years in this and many foreign countries, and is the all important tool of the most extensive honey producers of the world.

Comes with metal legs, metal binding and turned edges. The four larger sizes have hinged covers. The fire grate is of very substantial material, with an abundance of draft holes, the 4-inch size having 381 holes, equal to an opening 2 inches square.

A valve in the bellows of the larger sizes makes the Smoker respond to the most delicate touch.

The new Bingham comes in six sizes, including the Big Smoke, which is furnished both with and without shield. The larger sizes are best, as they hold more fuel, give more smoke, require filling less often, and are especially recommended to those who work with their bees several hours at a time.

Write for our complete catalog of bee supplies and accessories. Special circular of all sizes of Bingham Smokers free for the asking.

## A. G. WOODMAN CO.

**240 SCRIBNER AVE., N. W.**

**GRAND RAPIDS, MICH., U. S. A.**

DOCTOR—FIRE POT, 3½x7

A SUPERIOR QUALITY AT LESS COST

# SUPPLIES

A SUPERIOR QUALITY AT LESS COST

(MADE BY THE DIAMOND MATCH CO.)

## One Story Complete Dovetailed Hives

With metal telescope cover, inner cover, reversible bottom Hoffman frames, nails rabbets.

### STANDARD SIZE

Crate of five, K. D. 8-frame ---------- $12.65
Crate of five, K. D. 10-frame ---------- $13.25

### JUMBO SIZE

Crate of five, K. D. 10-frame ---------- $14.25

### HIVE BODIES

With Hoffman frames, nails, rabbets.

Standard size, crate of five, K. D. 8-frame ---------- $5.20
Standard size, crate of five, K. D. 10-frame ---------- 5.85
Jumbo size, crate of five, K. D. 10-frame ---------- 6.85

### HOFFMAN FRAMES

Standard size ---------- 100, $5.20; 500, $25.00
Shallow ---------- 100, $4.30; 500, $21.00
Jumbo ---------- 100, $5.80; 500, $28.00

### DIAMOND BRAND FOUNDATION

Medium, 5 lbs. 68c lb.; 50 lbs. 65c lb. Thin super, 5 lbs. 75c lb.; 50 lbs. 72c lb.

Aluminum Honey Combs, as now made by Duffy-Diehl Co., are meeting with success. We carry these in stock to supply eastern beekeepers.

Standard Langstroth ---------- $5.00 box of 10
Shallow Extracting ---------- $4.00 box of 10
Jumbo ---------- $6.00 box of 10

### GLASS AND TIN HONEY CONTAINERS

2½-pound cans, 2 dozen reshipping cases ---------- $1.45 case; crates of 100, $5.00
5-lb. pails (with handles), 1 dozen reshipping cases ---------- $1.35 case; crates of 100, $7.75
10-lb. pails (with handles) ½ doz. reshipping cases ---------- $1.10 case; crates of 50, $5.75
60-lb. tins, 2 per case—new $1.30 case; used, 25c.

#### WHITE FLINT GLASS, WITH GOLD LACQUERED WAX LINED CAPS

16-oz. honey capacity, ---------- $1.40 per carton of 2 doz.
Quart 2-lb. honey capacity ---------- $1.00 per carton of 1 doz.

## HOFFMAN & HAUCK, Inc., Woodhaven, N. Y.

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**Lewis 4-Way Bee Escapes**

Four exits from supers. Fits all standard boards. Springs of coppered steel. Made of substantial material. Price each 18c, postpaid.

**Made by**
**G. B. LEWIS COMPANY**
**Watertown, Wis., U. S. A.**
**For Sale by All Dealers.**

**BEES AND QUEENS**

Tested Italian queens ---------$2.00
Hybrid queens ---------- 1.00
Queens only with nuclei.
2-frame nuclei—Italian ------ 3.50
2-frame nuclei—Hybrid ------ 3.00
3-frame nuclei—Italian ------- 5.00
3-frame nuclei—Hybrid ------ 4.00

Add price of queen, if wanted with bees. Shipment begins April 1, 1922. No disease ever known in county. Satisfaction or money returned.

**DR. J. D. SHIELDS, Rt. 2 Natchez, Miss.**

**HONEY SECTIONS**

Just a reminder that our sections are made from Northern Wisconsin Basswood. This makes them **Just a Little better.** This basswood is all winter sawed. That's why our sections are **Just a Little Whiter** and look **Just a Little Better.** We are working overtime to give our customers **Just a Little Better Service.**

We have a full line of hives, supers, hive bodies, frames, foundation and all Standard Supplies that are **Just a Little Better.** Get our Catalog and know why.

**AUGUST LOTZ COMPANY, Boyd, Wisconsin**

**High Quality Queens, Nuclei and Package Bees at Special Prices**

| | 1 | 6 | 12 | 25 |
|---|---|---|---|---|
| Untested Queens | $1.00 | $5.50 | $10.00 | $20.00 |
| Select untested | 1.20 | 6.50 | 12.00 | 23.50 |

Select tested, $2.00 each.
2-frame nucleus, $3.25; 3-frame nucleus, $4.50.

1-pound package, $2.00; 2-pound package, $3.25; 3-pound package $4.50. Add price of queen wanted. These special prices on queens and bees are good only for delivery on any date you may desire after May 15. Fullest satisfaction guaranteed.

**FRANK BORNHOFFER, Mt. Washington, Ohio**

**TIN CANS**

It is our opinion that tin cans have "hit the bottom." Prices are far below last year. 2½ lb. cans, 5 lb. and 10 lb. pails furnished in dust proof cartons of 100 and 50; also in re-shipping cases of 6, 12 and 24. Five-gallon cans in strong cases that will stand reshipping. Write for our prices, stating number and sizes wanted.

**Dadant & Sons, Hamilton, Illinois**

THREE

BANDED

**I PAY THE TRANSPORTATION CHARGES ON PACKAGE BEES**

1-pound package, including young three-banded queen..... $4.50
2-pound package, including young three-banded queen..... 6.00
3-pound package, including young three-banded queen..... 7.50
25 cents per package less for twelve or more packages.
Delivered to your address via parcel post.

In comparing my prices with others, take in consideration you have no express charges to pay. Parcel post shipments go through quicker.

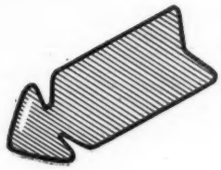
Prices of Queens after May 15:

| | |
|---|---|
| 1 select untested | $1.00 |
| 5 select untested | $4.75 |
| 10 select untested | $8.50 |
| 25 or more | 75c each |

Orders filled by return mail.
Pure mating and satisfaction guaranteed. It is left with customer to say what is satisfaction. No disease.

**JASPER KNIGHT, Hayneville, Ala.**

Root Company-Council Bluffs, Ia:—
You bet-Please send me information as to Spring development
Name Mr. Economical Bee Keeper
Address Everywhere—



# SERVICE

## A PART OF YOUR DOLLARS WORTH

¶ Mr. Economical Beekeeper is hot on the trail for new ideas that have proved successful. Trained beekeepers will be pleased, indeed, to give him full information if there is any way in which the Council Bluffs organization can be of service in making their work more productive and profitable. That's why we suggest you look over the coupon, for possible methods and procedure in getting a larger return at least possible expense.

## THE A. I. ROOT CO. OF IOWA

**COUNCIL, BLUFFS, IOWA**

**SERVICE COUPON**

☐ Please give me information as to Jumbo equipment. "More room at least possible expense" sounds good to me.

☐ I would like to see a sample, and get information, on Airco Foundation. If the use of Airco increases the yield, I want to know about it.

☐ How shall I proceed to build up the weak colonies this spring?

☐ I am sending you samples of brood. Is there foulbrood there? How shall I proceed to cure it?

☐ What suggestions have you for marketing my honey? I have sold _____ pounds, and have _____pounds still on hand.

☐ If I can make increased yields by using Root's Queens, please give me full information as to price, terms and guarantee.

☐ Please send me a copy of Gleanings in Bee Culture. It is still one dollar for 12 issues, and so full of **practical** suggestions and general information as to be indispensable to money-making beekeepers. I would be particularly interested in your clubbed offers.

Name _____

Address _____

I have _____ colonies of bees.

### HEATHER IN THE NORTHWEST

A letter lately received from J. J. Cryderman, a civil engineer as well as a beekeeper, of Blanchard Wash., conveys some very interesting information regarding the presence of the heather **(Calluna vulgaris)** in the northwest. Mr. Cryderman writes that he has known the plant for thirty years and states that it occurs from Mt. Rainier well up into Alaska. In the Mt. Baker region he states that he has seen thousands of acres, beginning at an elevation of about five thousand feet. In the Copper River region of Alaska he mentions having seen very large areas that must have run into the hundreds of thousands of acres beginning at an altitude of about two to three thousand feet. He adds that it is beyond any bee range that he has seen, as there are no settlements near, and that the wild bees had not shown up at the time of his last visit to that country.

Since heather is such a valuable source of nectar in Europe this is certainly interesting news to beekeepers. It may yet prove that there are heather ranges in America where large apiaries will one day be kept. We will be glad of further information in regard to this plant and especially as to whether it yields nectar freely in this country.—F. C. P.

### TARSONEMUS IN SWITZERLAND

By Dr. O. Morgenthaler, of the Liebenfeld Institute for the milk industry and bacteriology, at Berne,

On the first of February, this year, I examined the dead bees of the different colonies of the apiary of our Institute; in all of them the number of dead was normal. The purpose of this examination was principally to ascertain a possible infection by the Nosema apis, and incidentally a search for common acarids **(Tyroglyphidæ** of cheese) which I knew to readily accumulate upon dead bees. To my great surprise, I found, besides the expected Tyroglyphidæ, in four out of eight colonies, a much smaller acarid, which in all its appearance corresponded exactly with that described in England as the cause of the Isle-of-Wight disease. For greater certainty, I sent a preparation of drones and workers to the best judge of this acarid, Dr. Rennie, of Aberdeen, and the latter, in very gracious manner, confirmed the opinion that these acarids did not differ in any manner from Tarsonemus woodi. I have since found this acarid wherever I looked for it, that is to say, in healthy colonies at Adelboden (Bernese Oberland), at Lanzenhausern and Langenwil (both in the district of Schwarzenbourg, Berne), at Rishen, near Basel, and in a colony that had starved to death, from near Lausanne. Later, Mr. Leuenberger found it also in his apiary at Berne.

However, it has not been possible to discover the acarid in the pectoral of the bees. It is advisable to continue these researches, before we can assert that this animalcule develops, here, outside of the tracheæ, thus dif-


**MAY** **PACKAGE BEES** **MAY**

With untested 3-band Italian queens; 21 years of experience enables me to breed queens that get results. Shipments 2 days quicker to northern beemen.

2-lb. package.....$4.25. 3-lb. package.....$5.50. Deduct 50c each for hybrid bees. No disease in county. Bees shipped by express in May, 25 per cent with order and balance before shipment. Safe arrival guaranteed.

**BRUCE ANDERSON, Bath, N. C.**

**BEES FOR SALE**

We have a limited number of colonies of Italian bees for sale this spring in 8 or 10-frame hives; bees guaranteed healthy; each colony in fine condition and headed by a young queen reared last season.

Delivery can be made during May. Address

**THE HOFMANN, DUFF APIARIES, Lyons, Ill.**

**BEE SUPPLIES**

Send us your orders for your 1922 requirements NOW.
We guarantee our goods t obe first-class in workmanship and material.

**Special Prices on Tin Honey Containers**

| | |
|---|---|
| 5-lb. pails, per 50 | $3.75 |
| 5-lb. pails, per 100 | 7.00 |
| 10-lb. pails, per 50 | 5.50 |
| 10-lb. pails, per 100 | 10.50 |
| 60-lb. square cans, per case of two | 1.25 |

Offered for shipment in original packages only, either from Reedsville, Wis., or direct from can factory.

**No. 2 Section Honey Boxes**

50,000 4¼x4¼x1½, plain ..... $ 8.50 per 1,000
25,000 4¼x4¼x1¾, beeway ..... 10.00 per 1,000

We carry a complete line of everything for the beekeeper. Write for our new catalog.

**A. H. RUSCH & SON CO.**
**REEDSVILLE, WIS.**

**QUEENS**

Select three-banded Italians that will please. Our bees are unexcelled for gentleness, disease-resisting qualities, and honey production. Pure mating and satisfaction guaranteed.

| | 1 | 6 | 12 |
|---|---|---|---|
| Untested | $1.25 | $ 7.00 | $13.00 |
| Select Untested | 1.50 | 8.00 | 14.00 |
| Tested | 2.50 | 13.00 | 25.00 |
| Select Tested | 3.00 | 16.00 | 30.00 |

Select Tested Breeders, $5.00.

Day-old Queens, 40 cents each.

Queens ready to ship by return mail. Queens' wings clipped free of charge. Write for descriptive circular and prices per 100.

**HARDIN S. FOSTER, Columbia, Tenn.**

**Mott's Northern Bred Italian Queens**

Selected queens only, this season, so do not confuse price with others which are not for SELECTED queens.

Select untested, $1.50 each, $15 per dozen. Select, guaranteed pure mated, or replace free, $1.75 each, $18 per dozen. Select tested, $2.50 each. Virgin (not mated), 75c each, $8 per dozen. After June 1, 10 per cent off to Canadian trade, to help out on exchange.

Plans, "How to Introduce Queens" and "Increase," 25c.

**E. E. MOTT, Glenwood, Mich.**

# TENNESSEE-BRED QUEENS

**Fifty Years' Experience in Queen-Rearing**
**Breed Three-Band Italians Only**

| | Nov. 1 to June 1 | | | June 1 to July 1 | | | July 1 to Nov. 1 | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $2 00 | $ 8 50 | $15 00 | $1 50 | $ 7 50 | $13 50 | $1 25 | $ 6 50 | $11 50 |
| Select Untested | 2 25 | 9 50 | 18 00 | 1 75 | 9 00 | 16 00 | 1 50 | 7 50 | 13 50 |
| Tested | 3 00 | 16 50 | 30 00 | 2 50 | 12 00 | 22 00 | 2 00 | 10 50 | 18 50 |
| Select Tested | 3 50 | 19 50 | 35 00 | 3 00 | 16 50 | 30 00 | 2 75 | 15 00 | 27 00 |

Select tested, for breeding, $7.50.

The very best queen, tested for breeding, $15.

Capacity of yard, 6,000. I sell no bees by the pound or nuclei, except with high-priced tested and breeding queens.

Queens for export will be carefully packed in long-distance cages, but safe delivery is not guaranteed.

**JOHN M. DAVIS, Spring Hill, Tenn.**

"Five colonies of your stock produced 2,660 finished sections—the best one 616 finished sections." JOHN M. BIXLER, Corning, Iowa, February 1, 1921.

## SELECT ITALIAN QUEENS

Red clover strain; prolific, gentle and great honey gatherers. Get your order in early; will have them to ship after March 10. Untested, $1.25; select untested, $1.50; tested, $2.50.

Write for price on package bees.

**V. G. MILLER, Mathis, Texas.**

## FLORIDA FIRST

# QUEENS

## INDIAN RIVER APIARIES

**WILSON, FLA.**

See advertisement in classified department.

## PORTER BEE ESCAPE

SAVES HONEY TIME MONEY

**For sale by all dealers**

**If no dealer, write factory**

**R. & E. C. PORTER, MFRS.**
**Lewistown, Illinois, U. S. A.**

**(Please mention Am. Bee Journal when writing)**

## MONEY AND SATISFACTION FOR YOU

Save one profit by buying direct from factory. Standard, Jumbo and Modified Dadant Hives; cedar or pine. Write for catalog.

**A. E. Burdick Co., Sunnyside, Wash.**

# Paint Without Oil

**Remarkable Discovery That Cuts Down the Cost of Paint Seventy-five Per Cent.**

**A Free Trial Package is Mailed to Everyone Who Writes**

A. L. Rice, a prominent manufacturer of Adams, N. Y., discovered a process of making a new kind of paint without the use of oil. He named it Powdrpaint. It comes in the form of a dry powder, and all that is required is cold water to make a paint weather proof, fire proof, sanitary and durable for outside or inside painting. It is the cement principle applied to paint. It adheres to any surface, wood, stone or brick, spreads and looks like oil paint and costs about one-fourth as much.

Write to A. L. Rice, Inc., Manufacturers, 23 North St., Adams, N. Y., and a free trial package will be mailed to you, also color card and full information showing you how you can save a good many dollars. Write today.

## MAY QUEENS

**Priced Right. Quality Guaranteed**

Untested, $1.20 each; 12 or more $1 each. Select untested, $1.50. Tested $2. No disease.

**D. W. HOWELL**
**Shellman, Ga. Box B5.**

## GLADIOLI BULBS

Large collection of the best varieties. Write for my prices before buying elsewhere.

**WM. H. TOPPIN,**
**Merchantville, N. J.**


ferentiating biologically from Tarsonemus woodi.

Dr. Rennie, in his description of Isle-of-Wight disease, wonders how the sudden appearance of the disease in 1904 may be explained, since it was unknown before. He considers two possibilities: either the acarid then invaded the bee for the first time, or both already lived together, but, from unknown causes, the symbiosis, formerly harmless, suddenly took on a malignant action for the host. Our observations tend to sustain the second alternative, but, as we have stated before, it is premature to draw positive conclusions at this time.

In the first place it is necessary to establish the reproduction of the animalcule, and for this reason we ask the beekeepers to send us from 100 to 200 dead bees (dead in clusters), while stating whether such colonies presented any abnormality. When occasion offers, we will give the description and picture of this acarid; and for those who would like to search for it, we may state that its principal characteristics are a length of not to exceed one-fifth millimeter, and that its posterior legs are terminated by two long, rigid hairs or lashes. I will publish shortly, in the Archives of Apiculture, a short resume on the subject of "Acarids in the Hive."—Dr. E. Rotschy in Bulletin de la Societe Romande. Translated by C. P. Dadant.

### BEE ON COIN

In the Oregon Daily Journal Fred Lockley has the following note about a bee on a coin:

"In my collection is an ancient Greek coin having on one side a bee and on the other a stag. The bee and stag are the symbols of Diana. This goddess was the particular deity honored in Ephesus. Paul learned this to his sorrow, when the multitude shouted him down with 'Great is Diana of the Ephesians!' The coin is that of Ephesus, and the date of this particular variety has been fixed at about 350 B. C. The ancient Greek coins of that period as examples of medallic art, have never been surpassed, either before or since."

### Death of Wm. Steinbach

We recently learned of the death of Mr. Wm. Steinbach, of Bethel, Mo. Mr. Steinbach had kept bees for over forty years, being one of the pioneers in his section.

### Michigan Bee Schools

Russell H. Kelty and Edwin Ewell, of the Michigan College of Agriculture have been holding some two-day bee schools in various parts of the State. These schools bring the beekeepers together for discussion of the best methods of production and marketing and are the source of much interest.

Michigan is doing much to extend the development of beekeeping. With the inspection under the Department of Agriculture and educational work under the college all demands of the beekeepers are being met.

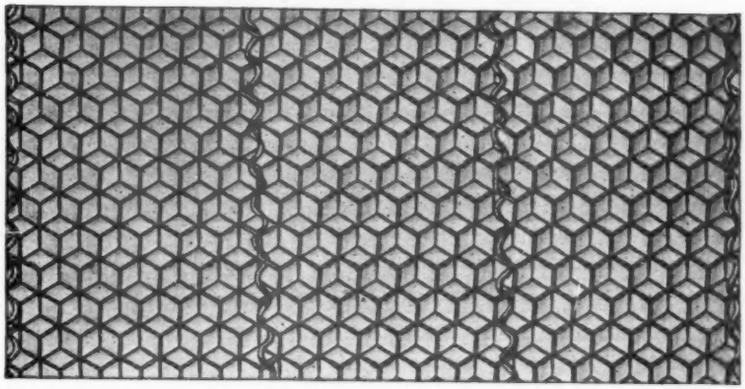
# EPOCH MAKING!

## DADANT'S

Makes non-sag comb.

**WIRED**

Cuts out cost and labor of wiring and imbedding.



Quickly accepted by bees.

**NON-SAG**

The finished comb a delight to the eye.

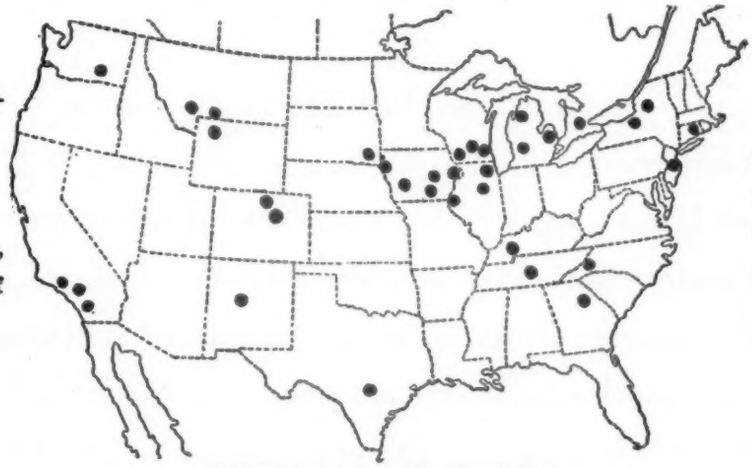
## FOUNDATION

TESTED BY TIME AND USE

Dadant's Wired Foundation is not an experiment of a few months' time, but it is a carefully evolved specialty of a life-time of foundation specialists.

**Where Wired Foundation has been Tested for Over Two Years.**

Each dot represents an apiary of from 100 to 2,000 colonies, an average of over 400 colonies.



The total colonies in the apiaries represented is over 15,000.

## THIS IS A REAL TEST

Dadant's Wired Foundation, therefore, is not alone a Dadant product, but it is the final perfection of a needed improvement to which many beekeepers in all parts of the United States have contributed. The map shows the location of many of the biggest beekeepers in the country who have tested the foundation in their own apiaries, guided its development over a long period and who have finally given it their unqualified support.

**Costs No More.** Since Dadant's Wired Foundation cuts out the cost and labor of wiring, its extra price of 3c per pound above the catalog prices of old-style foundation is thus immediately and fully returned to the beekeeper.

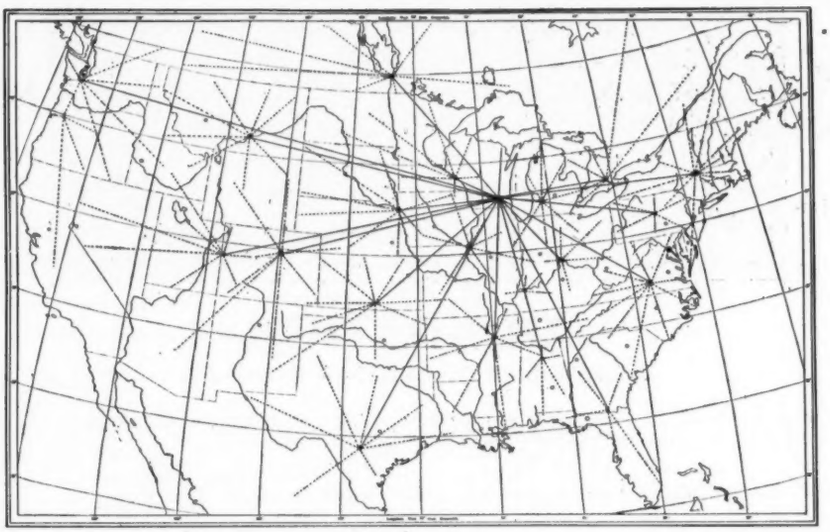
**Ask for Samples.** A small mailing sample sent free on request. Wired Foundation may be used in new style split bottom-bar frames or in the one-piece bottom-bar frames with equal satisfaction. It is also adaptable to any size and style of brood or extracting frame.

A sample of 7 sheets, for either style frame, will be sent, postpaid, to any address in the United States for $1.00. Specify size desired.

## DADANT & SONS, HAMILTON, ILLINOIS

***Catalog and Prices on Foundation, Bee Supplies, Beeswax, Wax Working into Comb Foundation and Comb Rendering for the asking***

# YOUR ORDER BECOMES OUR OBLIGATION



Real service portends real benefits to all buyers.
Prompt shipment and A-1 goods are not enough to give.
The map locates some of our authorized distributors.
Nearby distribution saves you transportation charges.
Our full guarantee backs up every "Beeware" sale made.
Goods and service must warrant your own banker's "okeh."
Ask today for free catalog and story of Lewis Service.
Our motto: "We cannot succeed unless you succeed too."

BEE HIVES AND APIARIAN EQUIPMENT
BEWARE
WHERE YOU BUY YOUR
BEEWARE
WATERTOWN WIS. U.S.A.
MAKES THE FINEST.
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AMERICAN BEE JOURNAL

VOL. LXII—NO. 5 HAMILTON, ILL., MAY, 1922 MONTHLY, $1.50 A YEAR

# THE HONEY REGIONS AND HONEY PLANTS OF NEBRASKA

—By Myron H. Swenk, Nebraska State and Experiment Station Entomologist.

BY the term honey region is here meant any geographical area, or part of the earth's surface, throughout which the nectar gathered by the bees in any important amount, whether used in brood rearing or stored as surplus, and the bulk of the pollen gathered, is obtained from the same general association of species of plants. For this reason the honey regions of the State of Nebraska, which are the present special subject of consideration, or of any other extended geographical area, are fundamentally to be determined by the character of the distribution of the nectar-producing plants. The distribution of these nectar-producing plants, as with all other plants, will be found to be governed by the conditions of the environment, and only such plants as are structurally and physiologically well adapted to some particular set of surrounding environmental conditions—conditions of soil, climate, elevation, contour, etc.—will be able to prosper sufficiently to become numerous, and therefore important sources of nectar, where those conditions obtain. Obviously, then, a honey region will be large or small in area according to the expanse over which generally similar physical conditions prevail. Animal forms, being governed in their distribution by the same underlying environmental factors, together with the added influence of the vegetation, will be found in associations of species inhabiting different faunal areas that are very similar in location and extent to the floral areas. For the most satisfactory limiting of the honey regions, therefore, we must first consider the general physical features of Nebraska.

### Natural Divisions

The soil of eastern Nebraska, west to an irregular line running in a general southwesterly direction approximately through western and southern Holt, southwestern Antelope, northwestern Boone, southern Wheeler, Garfield and Loup, northwestern Custer, eastern Logan and Lincoln, southeastern Mayes and western Hitchcock Counties, is a silty loam known as the loess, while west of this line the soil changes rather abruptly to a sandy loam, or even to pure sand. The loess soil area is much more fertile and more capable of holding the rainfall than is the western soil, so that where it occurs the floral covering is of plants that are accommodated to a life in comparatively moist soils (hydrophytes and mesophytes), while on the sandy western soils the plants are of a type suited to a life under dry or arid conditions (xerophytes).

Also, passing through the state from east to west, there is a steady decrease in the annual rainfall and an increase in the evaporation, so that from localities with an annual rainfall of 30 to 32 inches, where during the period of plant growth the rainfall exceeds the evaporation, we come to localities with only 12 to 15 inches of rainfall annually, and a much greater evaporation during the growing season. Quite obviously many of the species of plants that thrive in eastern Nebraska could not succeed under the dryer conditions prevailing in the western part of the state. In fact, many species of plants abundant in eastern Nebraska gradually decrease in the number of individuals, as the stress of increasing dryness is encountered toward the west, until, where the annual rainfall becomes reduced to 20 or 25 inches somewhat near the middle of the state, the limit of distrubution of that species is reached. Similarly, many western plants find a barrier to further spread eastward in the increasing humidity. At the same time, again proceeding from east to west, we find a steady increase in elevation toward the west and north, from less than 1,000 feet in southeastern Nebraska to over 5,000 feet in the northwestern part of the state. When the end of the loess soil is reached and the annual rainfall drops below 24 inches, we find the elevation has reached about 2,500 feet and this, also, has its effect on the conditions of plant growth.

### White Clover Region

Of course each plant species has its own range of adaptability to these varying conditions of environment, but nevertheless two fairly distinct groupings can be made, one of plants more or less characteristic of an eastern, more fertile, humid and lower honey region, and one of plants more properly belonging to a western, more sterile, arid and higher honey region. Inasmuch as the principal honey plant (excepting the sweet clovers) of the eastern region as a whole is probably white clover, which is absent or of no importance as a honey plant in the western region, while (again excepting the sweet clovers) alfalfa is the principal honey plant of the dry western region, these two regions might with some propriety also be called, respectively, the white clover and alfalfa regions.

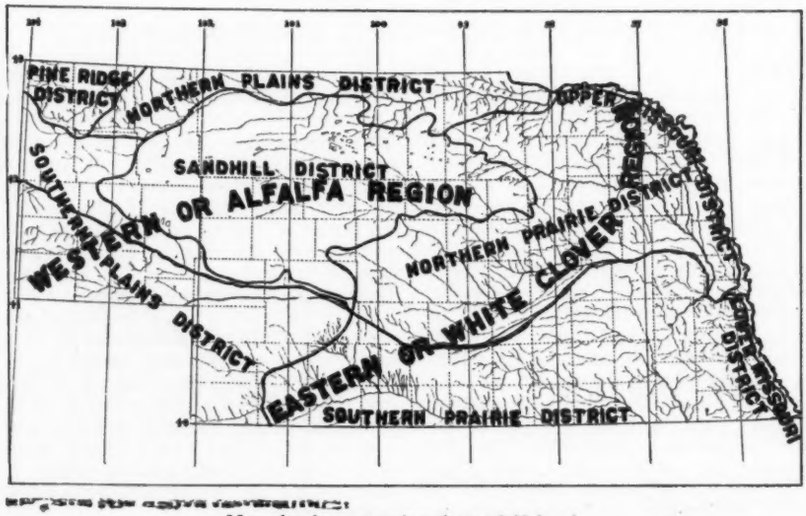
Considering more particularly the eastern or white clover honey region as above defined, we find that it can

be divided into two quite distinct subregions, differing chiefly in contour. First, along the eastern edge of the state runs the Missouri River, with its shifting sand-bars, cut-off ponds and marshy tracts, thickets of willow and bottom land timber of cottonwood, and, farther back, its high bluffs bearing open woods and shrubbery, steep banks and cool wooded ravines with springs and brooks, all this extending westward a few miles beyond the actual margin of the Missouri along its numerous tributaries from the west, especially along the Platte River. Second, extending from the Missouri River westward is an area of rolling prairies, intersected with streams fringed with a straggling growth of trees and shrubbery, the larger streams being broad and shallow with shifting sand-bars and the smaller ones narrower with steep, muddy banks, while following up the draws back from the streams, and on higher ground, are shrubby thickets and weed patches, and here and there, on low ground, are prairie ponds, marshes or flats, with numerous planted groves about the farm houses. In general, the prairie subregion is higher and drier than the Missouri subregion, and lacks quite a number of the nectar-producing plants that are to be found in the latter subregion. Further, the flora and fauna of the eastern white clover region consists largely of species that have come into the state, recently or remotely, from the east and south, and the territory belongs to the Carolinian faunal area. Many of the more recent of these migrants have not progressed much, if any, beyond the mouth of the Platte River, and, as a result, we may divide both the Missouri and prairie subregions into two districts, a northern and a southern, which may be called the Upper and the Lower Missouri Districts and the Northern and the Southern Prairie Districts.

Sweet clover is grown as a field crop in many Nebraska localities.

### Alfalfa Region

Now considering more particularly the western or alfalfa region, we find that it can be divided into four quite distinct districts. First, occupying a large area of about 18,000 square miles in the west-central part of the state, is the Sandhill District, an area of open sandhills with shifting dune sand, cut by numerous small streams which originate in lakes with sandy, marshy or boggy shores or in wet valleys with sloughs and hay flats, and which support a thin growth of shrubbery and trees that, together with numerous thickets of stunted trees in pockets in the hills and planted groves and tree claims, constitutes the sole woody vegetation of the area. Second, there are a Northern Plains District and a Southern Plains District, the former lying along the northern boundary of Nebraska and including the valley of the Niobrara River, and the latter including the more elevated area of southwestern Nebraska. Both of these districts are high, open, level plains with but few streams and these frequently running in narrow canyons, entirely devoid of natural timber except the few trees and shrubbery along the streams and in the bottom of the canyons. In parts of the Southern Plains District the natural character of the country has been much altered by irrigation ditches, seepage marshes and ponds, and it has a tendency to buttes, ridges and badlands at places. The Southern Plains District is higher and dryer than the Northern Plains District and has many plants not found in the Northern Plains District. Finally, in the northwestern corner of the state, is the Pine Ridge District, an area of deep, pine-clad canyons, often with sheer rocky sides hundreds of feet deep, with a dense, cool thicket of shrubbery and mixed with tree growth at the bottoms of the canyons, in which run small brooks emanating from cold springs. The canyons of the Pine Ridge District support a flora and fauna characteristic of the Transition Zone, while both of the plains districts belong to the Upper Sonoran Faunal Area.




Map showing natural regions of Nebraska.

### Honey Plants of the State in General

However, in spite of this very considerable diversity in the physical conditions surrounding the plant growth of the various parts of the state, quite a number of nectar-producing plants are so adaptive as to be found in greater or less numbers in their proper habitats in all of the honey districts of the state above described. During the spring honey flow, which corresponds to the vernal flowering period, the bees in all parts of the state may obtain pollen for early brood rearing from the white elm (**Ulmus americana**), box elder **Acer negundo**), field ash (**Fraxinus pennsylvanica**) and cottonwood (**Populus deltoides**), four species of trees which prosper throughout the state, except in the very driest soils. Some nectar, also, is obtained from the box elder, and both nectar and pollen are obtained in abundance from several species of willows which occur in profusion along our streams

and in wet soils generally, the most important of which are the black willow (**Salix nigra**), peach-leaved willow (**S. amygdaloides**), sand-bar willow (**S. interior**), and diamond willow (**S. cordata**). The blossoms of the wild plum (**Prunus americana**) furnish nectar and pollen in abundance during April and May, following a plentiful supply from the wild gooseberry **Grossularia missouriensis**) and, under cultivation, from the tame gooseberry (**G. grossularia**) and the red currant (**Ribes rubrum**). The wild red raspberry (**Rubus strigosus**), and, in moister soil, the wild black raspberry (**R. occidentalis**), furnish both nectar and pollen in limited amounts, and of course cultivated raspberries are also much visited by the bees wherever they are available. Along the streams the false indigo **Amorpha fruticosa**) furnish nectar and pollen, while on the prairies nectar, and sometimes pollen is gathered from the ground plum(**Astragalus crassicarpus**), wild vetch (**Vicia americana**), purple cone flower (**Echinacea pallida**) and prairie cone flower (**Ratibida columnaris**).

The main, or summer, honey flow, which corresponds to the aestival flowering period, beginning early in June and continuing until the diminishing of flowering by plants in general on the coming of hot and dry winds of late July and early August, brings on a number of important plants that are of general distribution in the state. The most important of these, from the standpoint of producing large surplus yields of honey, and at this time probably the most important single source of nectar over Nebraska as a whole, are the two species of sweet clover, first the yellow sweet clover (**Melilotus officinalis**), and a few weeks later the white sweet clover (**M. alba**), which, taken together, bloom in profusion and everywhere secrete nectar copiously through the entire aestival period, producing a fine, mild honey. On the prairies nectar is furnished by the purple prairie clover (**Petalostemum purpureum**), shoe-strings (**Amorpha canescens**), milk vetch (**Astragalus carolinianus**), horsemint (**Monarda fistulosa**) and buckbrush (**Symphoricarpos occidentalis**). Pollen, and a little nectar, is secured from the common wild rose (**Rosa arkansana**) of the prairies, and of course, also, from cultivated roses wherever they are available. In open woods and along streams the bees visit the blossoms of the Virginia creeper (**Parthenocissus quinquefolia**) and our two species of poison ivy (**Toxicodendron radicans** and **T. rydbergii**). Wherever they are under cultivation, as along the streams bottoms and in truck gardens, the blossoms of our commonly cultivated cucurbits—the watermelon, muskmelon, cucumber, squash and pumpkin—furnish a considerable amount of nectar and pollen, and many widely grown garden flowers, such as the hollyhock, are also visited by the bees at this time.

Rather bridging over the period of nectar scarcity of August, and extending into the early part of the fall honey flow, or serotinal flowering period, are the several species of **Persicaria** and **Verbena**, which occur widely over the state. In the former group the heartsease (**Persicaria pennsylvanica**, upland heartsease (**P. lapathifolia**) and swamp heartsease (**P. muhlenbergii**) grow in moist or wet soil, and in many localities and seasons furnish nectar abundantly from July to October, enabling the laying up for the winter's stores, if not for surplus. During the same period, in dryer situations, the common vervain (**Verbena stricta**), large-bracted vervain (**V. bracteosa**) and blue vervain (**V. hastata**) furnish considerable nectar. In dry soil clumps of sumac (**Rhus glabra**) and the narrow-leafed milkweed (**Acerates angustifolia**), and Indian hemp (**Apocynum cannabinum**) furnish more or less nectar. Other plants furnishing nectar during this period are the wild mint (**Mentha canadense**), buffalo bur (**Solanum rostratum**), horseweed (**Leptilon canadense**) and wild daisy (**Erigeron ramosus**).

The true fall honey flow, or serotinal flowering period, begins in early August and continues until the time of killing frosts. The asters and goldenrods form an important part of this honey flow. In dry soil over the state the many-flowered aster (**Aster multiflorus**) blooms profusely from August to October, while in moister situations the willow-leafed aster (**A. salicifolius**) blooms and produces nectar copiously during the same period. Three species of goldenrod—the late goldenrod (**Solidago serotina**), Missouri goldenrod (**S. missouriensis**) and Canada goldenrod (**S. canadensis**) bloom profusely on our prairies over the state and furnish nectar and pollen from August to October. In this same situation, and during the same period, Maximilian's sunflower (**Helianthus maximiliani**) and the button snakeroot (**Lacinaria punctata**) furnish nectar and pollen, while in wet soils the bur marigold (**Bidens laevis**) becomes often an important source of nectar. In moist situations nectar is also secured from boneset (**Eupatorium perfoliatum**) and Jo-pye weed (**E. purpureum**), while our two common species of ragweed (**Ambrosia elator** and **A. psilostachya**) furnish an abundance of pollen. Late in the season the gum-weed or rosin weed (**Grindelia squarrosa**) yield a considerable amount of nectar that produces a very low grade of honey.

**Honey Plants of the Eastern or White Clover Region**

In addition to the above mentioned sources of nectar, which are more or less common to the whole state, the eastern or white clover region has a large number of plants which do not occur, or at least are not important sources of nectar, farther west. In the spring honey flow, pollen is gathered for early brood rearing from the slippery elm (**Ulmus fulva**), walnut (**Juglans nigra**), bur oak (**Quercus macrocarpa**), red cedar (**Juniperus virginiana**), soft maple (**Acer saccharinum**) and the prairie willow (**Salix humilis**). The last two mentioned trees also furnish some nectar. The bees are really started off in earnest in building up for the summer honey flow by the copious quantities of both nectar and pollen which they obtain at this time, first from the dandelion (**Taraxacum taraxacum**) and later from the addition of fruit bloom. Fruit bloom includes chiefly the cultivated apple, pear, plum, cherry and peach, and both wild and cultivated strawberries. The locust (**Robinia pseudoacacia**), honey locust (**Gleditsia triacanthos**) and hardy catalpa (**Catalpa speciosa**) are three trees which produce considerable amounts of nectar and some pollen, and, following the fruit bloom, are valuable in continuing the building up of the colonies. On the prairies the prairie groundsel (**Senecio plattensis**) and in the woods the wood violet (**Viola papilionacea**), also at places contribute to the available nectar supply.

The main honey flow begins with

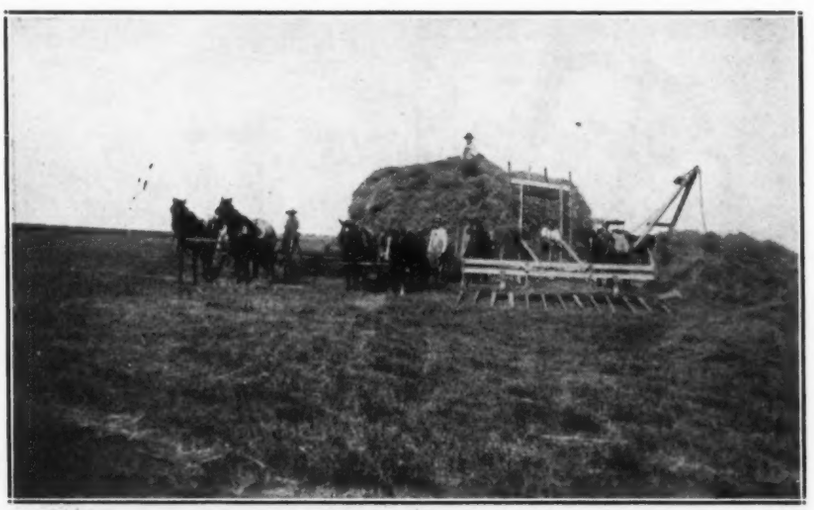
Cattle on a Nebraska prairie pasture.

the blooming and secreting of nectar by the clovers—white clover, alsike clover and the sweet clovers—all of which flourish in the eastern region. White clover varies in value from season to season, and, while in many seasons and localities it is of enormous value to the beekeeper, is not as dependable as the sweet clovers. Often it blooms profusely during June and July without secreting much nectar. When it does produce nectar the very finest of honey is the result. Alfalfa bloom is, in this region, of little or no practical value to the honey producer, as a rule, though in exceptional seasons the bees visit it sparingly. Pollen is obtained in abundance during July and August from Indian corn and sorghum. On the prairies and open fields, nectar is gathered from several species of milkweed—the common milkweed **(Asclepias syriaca)**, smooth milkweed **(A. sullivantii)**, swamp milkweed **(A. incarnata)** and whorled milkweed **(A verticilata)**—from white vervain **(Verbena urticifolia)**, from white and hairy prairie clovers **(Petalostemum candidum** and **P. villosum)**, from the tick trefoils **(Meibomia canescens)**, etc.; from ground cherry **(Physalis virginiana)**, from sow-thistle **(Sonchus asper)** and from wild mustard **(Brassica nigra)**, most of these also yielding more or less pollen. In moist soil the blossoms of the elderberry **(Sambucus canadensis)** are much visited by bees for pollen and in the woods the blossoms of the coral-berry **(Symphoricarpos symphoricarpos)** are also visited for the nectar.

Some of the above mentioned sources of nectar are continued over into the early fall honey flow. In July the partridge pea **(Cassia fasciculata)** blooms profusely in dry situations everywhere ,and produces nectar, in its extra-floral nectaries on the petioles of the blossoms, which is gathered by the bees. At this time, also, waste places become a veritable mass of yellow because of the abundance of sunflowers **(Helianthus annuus)**, which supply both nectar and pollen. Cultivated buckwheat occasionally supplies some nectar, but more frequently the lady's thumb **(Persicaria persicaria)** and smartweed **(P. hydropiper)**, produce nectar, the former being valuable and producing a good honey, while probably the beekeeper would be as well pleased if his bees would not visit the latter plant. In the woods, nectar is obtained at this time from the wild cucumber **(Micrampelis lobata)** and the Missouri virgin's bower **(Clematis missouriensis)**, while on the prairies two species of wild sage, first the **Salvia lanceaefolia** and then the **S. pitcheri**, attract the bees by their blue flowers and nectar secretions.

The coming on of the fall honey flow brings in a great number of **Compositae** as nectar-bearing plants in the eastern region. First comes the western inronweed **(Vernonia fasciculata)**, then the several species of bur marigolds or Spanish needles in the moister soils, the most important species being the nodding bur marigold **(Bidens cernua)**, leafy-bract d bur marigold **(B. comosa)**, beggarticks **(B. frondosa)** and the long-bracted Spanish needle **(B. involucrata.)** Other plants visited for nectar at this time are the tall thistle **(Cirsium altissimum)**, tall thoroughwort **(Eupatorium altissimum)**, white snakeroot **(E. urticaefolium)** and the saw-toothed sunflower **(Helianthus grossesserratus)**. The asters, goldenrods and blazing stars, which furnish nectar and pollen from August until the coming of frost or nearly so, include such species as tall white aster **(Aster paniculatus)**, New England aster **(A. novae-angliae)**, arrow-leafed aster **(A. sagittifolius)**, purple-stemmed aster **(A. puniceus)**, stiff goldenrod **(Solidago rigida)**, blazing star **(Lacinaria squarrosa)**, prairie button-snakeroot **(L. pycnostachya)** and large button-snakeroot **(L. scariosa)**. Much pollen is obtained from the cocklebur **(Xanthium commune)** at this time.

One of the most valuable nectar-producing plants of the summer honey flow that is peculiar to the Missouri district is the basswood **(Tilia americana)**, a tree that, where it has not been too much cut out, is capable of producing a heavy surplus of honey in some seasons.



A typical scene in a Nebraska hayfield. Alfalfa is grown in large acreage in some parts of the state.

### Honey Plants of the Western or Alfalfa Region

Of the four districts which we here recognize as constituting the western region, the Pine Ridge District has the most individual flora of honey-producing plants, a flora largely derived from the west and north, the Southern Plains District next, while the Northern Plains District and the Sandhill District have many plants which are common to the districts both to the west and east of them. Pollen for early brood rearing is furnished in the Pine Ridge District by the aspen **(Populus tremuloides)**, and there, as well as in the western part of the Northern Plains District, the western yellow pine **(Pinus ponderosa)** furnishes pollen, while over the Pine Ridge and both plains districts a few western red cedars **(Juniperus scopulorum)** also furnish a limited amount. Nectar and pollen are furnished over the whole of the western region by the western choke cherry **(Padus melanocarpa)**, which is abundant at many places, and by the golden currant **(Ribes aureum)**, which is more or less common along the streams. In the Pine Ridge District the western wild gooseberry **(Grossularia setosa)** and the northern gooseberry **(G. oxyacanthoides)** furnish nectar and pollen during May and June, along with nectar from the wood strawberry **(Fragaria americana)**, while not only in the Pine Ridge District but also in both plains districts, the low juneberry **(Amelanchier alnifolia)** furnishes nectar in the early spring. However, in general, this western region is deficient in spring-blooming nectar-producing plants.

In this western region alfalfa secretes nectar very copiously from early June on, especially in those localities where it is grown under irrigation, producing an excellent grade of honey, and it, together with the sweet clovers, are the most important honey plants of the region as a whole. Throughout this western region the loco-weed **(Astragalus molissimus)** and the bird's-foot trefoil **(Hosackia americana)** furnish nectar, while in the Southern Plains District, during May and June, the lupine **(Lupinus pusillus)** and wild liquorice **(Glycyrrhiza lepidota)** attract the bees.

Probably, on the whole, the most important native plants common to the whole of this western region, from the standpoint of the honey producer, are the Rocky Mountain bee plant **(Cleome serrulata)**, which grows in profusion and secretes nectar copiously all through July and August, its relatives, the cleomella **(Cleomella angustifolia)** and the clammy-weed **(Polanisia trachysperma)**, of similar distribution but less valuable, the red gaura **(Gaura coccinea)**, which produces nectar and pollen in important amounts during the spring and early summer, the plains sunflower **(Heli-**

**anthus petiolaris)**, which abounds everywhere from June to September, and two species of **Nuttalia**—the bractless nuttalia **(Nuttalia nuda)** and the showy nuttalia **(N. deceapetala)**—which also supply nectar freely during July and August. In the Southern Plains District, **Oreocarya suffruticosa** and **O. glomerata** are nectar plants of some value.

In the Pine Ridge District such plants as the snowberry **(Symphoricarpos racemosus)**, spreading dogbane **(Apocynum androsaemifolium)** and willow-herb **(Chamaenerion angustifolium)** occur more or less commonly, and furnish nectar in July and August.

The Sandhill District receives, at least along its eastern edge following the streams, a considerable infusion of the nectar and pollen plants that belong to the Prairie District. Among these may be mentioned the bur oak, red cedar, prairie willow, dandelion, prairie groundsel, wood violet, elderberry, common and whorled milkweeds, white vervain, white and hairy prairie clovers, coral-berry, partridge pea, lady's thumb, bush clover, western ironweed, tall thistle, and most of the species of **Bidens, Aster, Solidago, Helianthus** and **Lacinaria** that more properly belong to the Prairie District. Similarly, some of the western plants above mentioned, belong more particularly to the western portion of the sandhills. It also has several species of **Persicaria, Aster, Solidago,** etc., which are peculiar to it. The Northern Plains District, also gets a migration along the Niobrara River from the Upper Missouri District of such plants as the walnut, strawberry, Missouri virgin's bower, white snakeroot, etc.

Taken altogether, the state of Nebraska supports a nectar-producing flora of great diversity and importance. Some of these plants, both native and introduced, are of enormous value and capable of supplying enough nectar to enable many colonies of bees to lay up a heavy surplus, though most of them occur in numbers that are sufficient only to promote brood rearing and to assist more or less in increasing the total yield.

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## MEAT FOR SPRING FEEDING

By Chas Hofmaster

I had heard it before, but paid little attention to it. But this winter I was told again by two trustworthy parties about feeding bees in early spring with boiled meat. An old lady told me that her father, who kept a few hives of bees, regularly, at the first warm spell every spring, killed a chicken, cleaned it and boiled it very tender, then sprinkled it liberally with salt and hung it up near his bees. She said she saw that suspended chicken so thickly covered with bees as to resemble almost a hanging swarm of bees. And the bees stayed with it till there was nothing left but the bare skeleton. An old man, who kept until a few years ago, a number of hives himself, told me a similar story. But instead of chicken, he used rabbits, prepared similarly. He said the first rabbit, to attract the bees, must be rubbed with salt or meal, it does not matter which, but afterwards such baiting is not necessary. He said he preferred this way of feeding to that of sugar syrup, as it does not induce robbing. He says the bees just swarm to it, but quit as soon as there is plenty of pollen and honey to be had. Now, how about it? I don't care much about experimenting with my bees, as they have plenty of stores, but I may try it at the proper time, just long enough to observe the action of the bees on it. There can be no doubt of their eating the boiled meat, but I would hardly expect them to store such stuff in their combs like pollen. Lean meat, being a nitrogenous substance, would seem to be only a substitute for pollen, but my informant is positive he carried starving colonies by his method nicely over until nature provided for them again.

Oklahoma.

I have often heard this statement that bees could be fed on meat, sprinkled with salt after boiling it. If there is any truth in it, the salt is evidently the material that the bees were seeking, and if the facts were positively known, it is probable that the bees would be shown to have taken nothing but the salty juice.

However, thinking the matter would be of interest, I ransacked my library of old books and found the following statements on feeding bees:

Butler (1634) wrote, page 142 of his "Feminine Monarchie":

"The natural food of bees is honni, for want or for sparing whereof, many other things have been devised. Aristotle mentioneth figs and all such sweet things. And Plini, speaking more particularly, commendeth raisins, and figs, and teased wool wet in sweet wine made of raisins, or nue wine boyled, or Honni water. And some of our country-men have practised to give them Bay-salt, Beanflour, Ground-mault, rosted Wardens (a variety of pears.—Editor) and apples and sweet wort. All which things, though they will spend, yet cannot they be preserved by them, without Honni.

"This feeding-honni (as that which is stolen) when they have first taken their refection, they convey into their voyd cells: which, because they cannot now shut them up, as before Virgo (September), for want of wax, they do but half fill. And therefore they first spend of this late-gotten honni, reserving that, which was more safely laid up, unto the last."

J. Simon (Republique des Abeilles, page 146, 1758) writes:

"Give them oats with a piece of sugar, about a quarter pound in weight. The bees will consume the oats with the exception of the bran."

Ducarne (1781), in his Treaty on the Economic Education of Bees, also advises the mixing of 6 pounds of honey with one pound of good wine "that is not sour." He also speaks (Vol. 2, page 133) of people feeding bees in spring "with different compositions, pap made with honey, lentil or field bean flour mixed; also soft white bread soaked with honey and old wine. It is claimed that this food cures them of diarrhea."

Beaunier (1806) advises dilution of honey with one-fourth its volume of water containing a little salt, adding a few drops of brandy. He also recommends sugar syrup with grape juice, for spring feeding. In every case, the reader will bear in mind that they advise heating these mixtures, which positively evaporates their alcoholic contents.

Gelieu (1816) advises, page 30, when feeding bees with granulated honey, to melt it and mix with it a small quantity of wine, saying that this "thus increases their activity."

Huish (1815) in his Treatise on Bees, page 290, says:

"In regard to the substances, which are proper for the feeding of bees, I am perfectly convinced, singular as it may appear, that honey alone is very injurious to them, as it in general gives them dysentery. Wherever honey is given, it should be mixed with some good old wine, in the proportion of six pounds of honey to one of wine."

A little farther along he gives other recipes, one of which is as follows:

"To two quarts of good old ale, put one pound of moist sugar. Boil them until the sugar is wholly dissolved, carefully skimming it. When it is cold, it will be found to be of the consistency of honey, and it may be given to the bees. . . ."

Huish, the reader will perceive, uses his habitual lack of judgment in condemning honey as bee feed. It will be remembered that this writer unmercifully criticized Huber's writings and denied assertions of Huber which have since been established as facts without possibility of doubt.

If our correspondent tries the chicken feeding, we would like to hear the results of his experiment.—(Editor).

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## A GOOD HIVE TOOL

By David Hartman

Take a medium-sized flat file and heat the end toward the handle cherry red. Cut off all the untempered part of this end. Proceed to make a chisel blade on this end. Make it tapering and about 1¼ inches broad. This acts as a wax scraper. Heat the other end of the file and turn it on edge and hammer down until the file tapers to almost a square point. It is well to have it a little wider than thick. Make a screwdriver-like point on this end. Heat both ends nearly cherry and let them cool until blue; plunge into water to temper.

This tool will be found a very substantial one. The blade may be run under a hive body and the body pried off even when fastened with eightpennies. The scraper will hold its edge even when given rough usage. It isn't the best tool there is, but it is a good one.

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## THE EDITORS' VIEWPOINTS

### NO MORE BEES TO BE IMPORTED

The spread of the acarine disease among the bees of England and the finding of the mite causing the disorder on the European continent has alarmed officials in charge of disease control in this country.

An appeal to the Government by a committee from the American Association of Economic Entomologists to prevent the importation of foreign bees was favorably considered and the Post Office Department, acting upon these suggestions, has prohibited the importation of queens from foreign countries, excepting Canada, through the mails. Since most of the bees and queens coming into this country from abroad come by mail, it is probable that but few foreign queens will come in. It is expected that Congress will enact a law prohibiting all importations, thus shutting out express and freight shipments also.

We herewith give the ruling of the Second Assistant Postmaster General:

Washington, March 21, 1922.

Owing to the prevalence of a serious disease known as Isle of Wight disease among adult honeybees in certain foreign countries, the importation of honeybees through the regular and parcel post mails is hereby prohibited.

Owing to the precautions taken by the authorities in Canada to guard against the spread of the disease among honeybees in that country, this prohibition does not apply to bees imported from Canada. E. M. White,

Acting Second Assistant Postmaster General.

While the acarine disease is still unknown to some sections of Europe, it may exist there, for the Bulletin of the Societe Romande of Switzerland, for February, page 37, announces that Dr. Morgenthaler described the disease, Isle of Wight, at Berne, in 1921, and the danger to American beekeeping, should the disease be introduced, is so great that the committee thought best to endeavor to stop further importation of bees at this time.

We are also informed that the Commonwealth of Australia has similarly quarantined bees, used or second-hand hives, or hive goods or products (excepting honey or wax) from the United Kingdom, owing to the danger of introducing a disease of bees known as "Isle of Wight Disease."

It is possible that the Acarapis in question exists in America, but is not as injurious as in Great Britain, but until the matter is made more clear, it is wise to sustain the regulations of the Government and abstain from further importations.

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### CO-OPERATION

Other countries are thinking that the United States is ahead on co-operation, and we have lately been asked to forward to Europe some copies of the League's Constitution and By-Laws. But the fact is that our people are very lukewarm, so far, and some of the States are hesitating upon whether they ought to join the League. Yet, what we need worst of all is an understanding between beekeepers as to advertising and selling honey. The League has done some good work, but it is a drop in the pail unless all join hands and help keep it up.

Mr. York has a very fine article in the Beekeepers' Item for March, in which he compares prices at different places, showing that it is mainly for lack of concerted effort that honey is so irregular in price, both wholesale and retail, and explaining that the greatest fault with marketing is "under consumption" and "uneven distribution." Yes, the secret is there, and we need co-operation at least in understanding in regard to prices.

We are informed that France is organizing a "Federation of Beekeepers' Societies." Fifty-six associations were represented at their initial meeting. We have 48 States, which ought to be federated, but when States as notable as Ohio and Pennsylvania hesitate as to whether they ought to co-operate or "go it alone," there is little show for a thorough understanding between the States of the Union as to the prices they ought to establish on honey, and many of us will still be in the dark as to what prices to ask.

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### DRIFTING

What our beekeepers call "drifting" is the attraction by strong colonies of the bees of weaker ones. It is like "following the bell-wether" among sheep; the bees being attracted most evidently by the greater sound, stronger odor, more thrifty appearance of the hive front to which they "drift." In the March number of "L'Abeille," the account is given of a colony which yielded 264 pounds (120 kilos), while the others gave but little. That colony was at the lower tier of a house-apiary, and according to its owner, many of the laden bees of the upper coming home would miss their entrance, fall upon the bottom stand, and enter this strong hive, to the loss of the weaker ones.

The writer of the article in question, H. Lolive, calls attention to the fact that many have noticed, when first introducing Italian bees. It is that you often find **pure** Italians in colonies of common bees, and vice versa. This is easily noticed, and we have often seen it. But when your bees are all of one breed there is but little chance to notice the drifting.

This "drifting," which the French call "captation," is often injurious, and even destructive, to weak colonies, and many beekeepers fail to take it in consideration when they handle their bees or move them about. Many a colony, packed for winter in a treble or quadruple winter case, has lost its bees to a stronger hive, because the change of location caused indecision, or, in other words, irresolution in the bees whose location was thus slightly changed. The law of attraction is mentioned by the French writer as the primary cause, for it rules even the planets and the stars and the little bodies are always attracted to the larger ones.

Whatever may be the cause of this law of nature, do not forget its existence when you have a large number of colonies in close proximity, and especially do not overlook its possible effects when you make increase and change your colonies from one spot to another. Drifting is injurious to weak colonies.

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### HONEY VERSUS GLUCOSE

We commend the article in this number by Joseph B. Milgram, to the attention of our readers. It tells the story which we have often told, but in slightly different shape. The conclusion in every case is that, honey being a natural production, is healthy, while the artificial foods, especially those made, like commercial glucose, by a chemical process, are bound to tell on the human constitution. Bear it in mind and tell your friends, and your customers.

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### HARMONY IN THE HUM OF THE BEES

That the letters of Huber are giving many of our readers great pleasure, is evidenced from the fact that many mention them; also other magazines are taking interest in them, and one Belgian magazine is even re-translating them into French, from our columns.

In the present number the reader will find the letters which, to us, have the greatest value; they show Huber's appreciation of musical sounds and his opinion that the bees themselves enjoy the cheerful hum of the flying swarm. Yet some scientists would have us believe that bees cannot appreciate sound, because we have thus far been unable positively to locate their auditory organs.

### CAN BEES RECOGNIZE POISONED FOOD?

In the article on an acarus preying up n the honeybee, translated from L'Apiculteur of 1866, page 212, of this number, Duchemin states that bees recognize poisonous food and abstain from feeding upon it. If it were so, there would be no need of worrying over possible poisoning of bees by sprays used to kill insects. The bee, unfortunately, is not so discriminating as this.

### IS IT A STAMPEDE?

Since the editorial on page 202 relating to prohibiting further importation of bees was written, a long letter from a prominent beekeeper has reached us. He offers a vigorous protest against a quarantine which will prohibit importation from countries in which the acarine disease is not known to be present. The statement is made that Isle of Wight disease has been very bad in Great Britain for many years. In all that time there has been no move on the part of the Department of Agriculture to quarantine our country even against the infected district. Australia has recently prohibited the importation of bees from Great Britain, but has made no attempt to check the movement from other countries.

Of late there has been renewed interest in the bees of other countries. Numerous plans were under way to import bees from Italy and from Carniola, especially. There is also much interest in the native bees of China and, following one unsuccessful attempt to introduce them last year, several were considering trying it this season. All these importations will be shut out by the order of the Postoffice Department recently entered.

Our correspondent admits that a quarantine should be provided against the countries where the disease is known to be present, but insists that those interested should be given an opportunity to be heard before placing such a quarantine against all foreign countries.

### THE ACARAPIS AND OTHER ACARIDS

One of our most interesting correspondents, Mr. E. Giraud, of France, writing us concerning the English discovery of Acarapis woodi, which is said to cause Isle of Wight disease, mentions the Duchemin article of L'Apiculteur, published in 1866, and gives us this commentary on the matter of acarids which are born upon plants and later prey upon the animal kingdom:

"A number of acarids which develop upon plants may prey upon man and animals. The Trombidium, of a fine, soft red color, which reaches 5 millimeters in length and which may be found in meadows or on lawns in spring, is inoffensive. It lives on vegetable juices. But the female lays eggs in the grass, which give birth, in August-September, to minute larvæ of orange-red color, with three pairs of legs. These almost invisible larvæ, in the fall climb upon the legs of people who walk about the meadows or the grassy yards and fix themselves upon the surface of the skin by driving into it their rostrum (or beak) like a spear, preferably at the root of the hairs; they suck the blood and cause unbearable itching, which prevents sleep. The abdomen of this Trombidium, when gorged with blood, becomes enlarged to three or four times its natural size; it remains on the skin only a short time. It preys upon almost all the animals that feed upon grass, and in dry years they are so numerous that small animals may die; small chickens, especially, die sometimes in the proportion of a third."

As our readers know, similar acarids, commonly called "harvest tick" or "jigger," and described under the scientific names of "Trombidium americanum" and "Leptus irritans," are common in the United States. It is therefore not at all astonishing that an acarus should cause the death of the honeybees when it invades their breathing tubes.

### MORE ERRORS

In our March number, page 112, the Editor's Answers contain the statement that a cubic centimeter of water weighs one "grain." This should have read "one gram," but the mistake of the printer was overlooked in reading proof. One of our kind friends, from Minnesota, calls our attention to the mistake and apologizes for correcting us, stating that a cubic centimeter of water weighs 15.43 grains. He is right, but there was no need of apology for calling our attention to it. We are not perfect, sorry to say it, but everybody knows it as well as we do and it is always well to have our mistakes corrected. Please do not hesitate in telling us, when you find errors, especially errors of fact, which are not debatable.

### PUBLIC ERRORS ON BEES

In our April editorials, we mentioned some of the errors which the public makes concerning bees, and urged the beekeepers to take pains to enlighten the public, especially on such errors as cause a distrust of bees and beekeepers. The Gazette Apicole for February also mentions a number of errors made by the "common herd" concerning bees. Here are some of them:

Bees are easily domesticated. As soon as they get acquainted with their owner they cease fighting him.

They bore through and tear up both fruits and flowers.

They gather upon flowers a yellow substance with which they manufacture beeswax.

Honey is a discharge from their bowels.

When they swarm, one should stop them by pounding upon kettles, pans and bells.

They have a socialistic organization, but they are governed by a queen.

Add the above to the errors commonly believed which we mentioned in our April number and there are some good subjects for any beekeeper to use in entertaining his acquaintances and teaching them things they ought to know.

### GRANULATION

Our appeal to beekeepers to educate their customers regarding the granulation of honey has been taken up by E. G. LeStourgeon in the Beekeepers' Item for March, with a strong urge in the same direction. In a private letter to the editor Mr. LeStourgeon says:

"I have already written you commenting on your editorial on granulated honey in the March number of A. B. J., page 99. We sent a copy of this editorial to every one of the wholesale grocers who handle Lone Star Honey."

We mentioned the fact that, in the Old World, the public knows that good honey granulates in cold weather, unless it has been tampered with or unless it is adulterated.

And now here comes to us a question, from an old friend in Europe, emphasizing the fact that over there they want the honey granulated. Here is the question, from one who is an old beekeeper but has never been a producer on a large scale:

"How do your large producers and honey dealers manipulate the honey when it is to be put into small jars, or pails, in thousands of pounds, and it is thoroughly hardened? After I handle a hundred pounds my hands are sore."

So,you see, my friends, that our European friends want to keep the honey in the granulated shape, while we always melt it to put it up. When the honey is quite solid, it is necessary to warm it so as to soften it before putting it up. But it is advisable not to warm it enough to entirely liquefy it, so that it may harden again. A very good way is to put it up in retail packages before it hardens. We aim to do it as much as possible.

### TARSONEMUS VERSUS ACARAPIS

As often happens, the scientists do not agree as to the proper name to give this mite. The new name suggested by Hirst is "Acarapus woodi," instead of "Tarsonemus woodi." The former name seems to us rather more proper, if the mite is specially a parasite of the honeybee, being compounded out of the two names "acarus api.." making "acarapis" by elision of the last two letters of the first word.

A great importance is given this matter from the fact that the mite has also been discovered on the Continent of Europe, as was evidenced by the statements given in L'Apiculteur, of Paris, for January, 1922, page 20, by Messrs. Berland and Seguy, from samples sent by Abbe Rungis.

# THE DEMAREE METHOD OF SWARM CONTROL

By Wallace Park
Assistant Chief in Apiculture, Iowa
Experiment Station.

Many methods of swarm control have been advocated, while but few have proven successful in the hands of the average beekeeper, because most of them entail a considerable amount of manipulation. The Demaree plan has found favor because it requires comparatively little manipulation and seldom fails to prevent swarming. The plan is justly popular among users of Langstroth and other small hives and statements made in this paper apply only to the use of such equipment.

A brief description of the original Demaree method is quoted from the American Bee Journal of April 21, 1892. Mr. Demaree wrote in part:

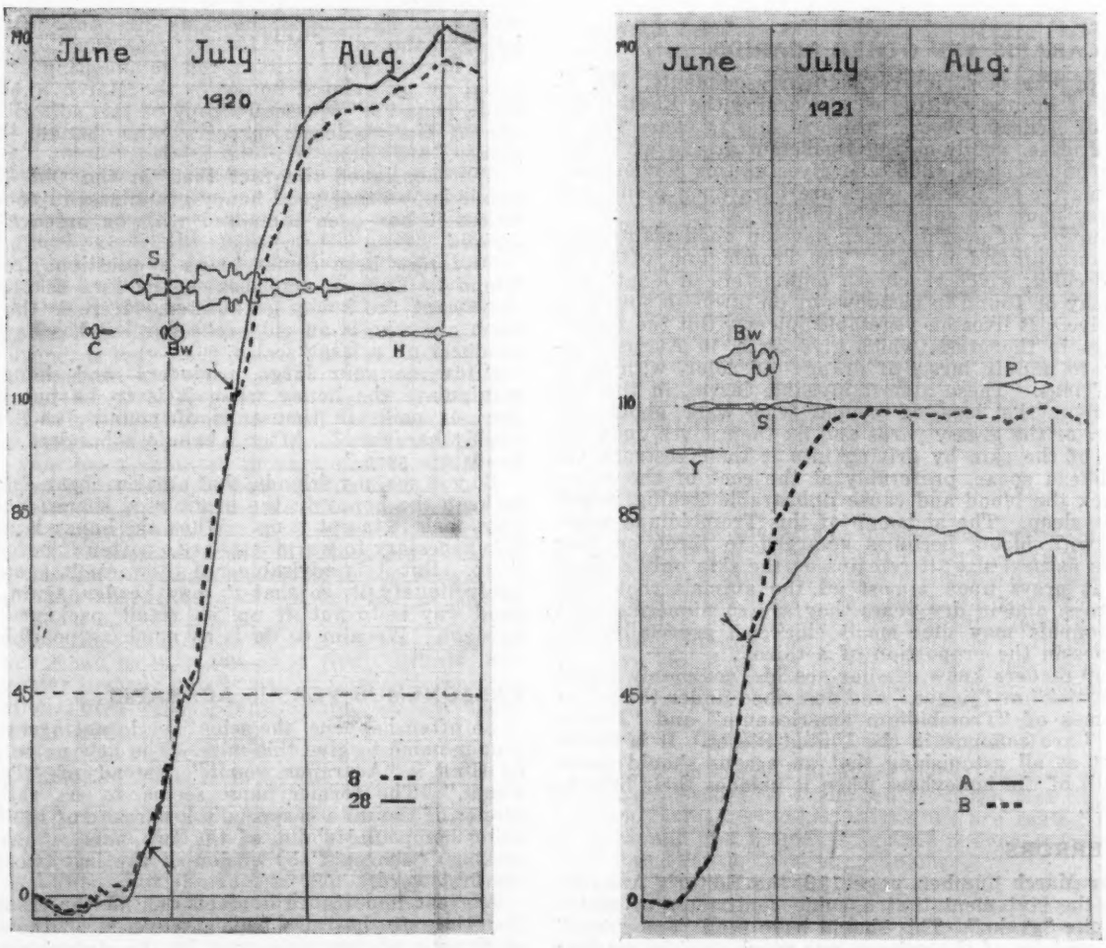
"At the commencement of the swarming season . . . I begin with the strongest colonies and transfer the combs containing brood from the brood-chamber to an upper story above the queen excluder. One comb containing some unsealed brood and eggs is left in the old brood-chamber as a start for the queen. I fill out the brood-chamber with empty combs . . . but full frames of foundation may be used in the absence of drawn combs."

Many beekeepers follow the plan as originally given; but in some seasons, and especially in some localities, more or less swarming occurs even in colonies so treated. In an attempt to eliminate swarming still more effectively, various adaptations of the plan have been used with considerable success.

Probably the best known of these is the one advocated by Dr. Phillips and Mr. Demuth in their lectures at beekeepers' short courses throughout the country. This modification of the Demaree method differs from the original in only one essential point. Instead of using the hive body of sealed brood as the second story, it is used as the fourth or fifth with two or three supers of extracting combs between it and the new brood chamber containing the queen. This method is so effective in the prevention of swarming that even such strong colonies as result from the use of a two-story brood chamber during the fore part of the season, are held together throughout the honey flow with little danger of swarming. An occasional failure has been reported, but up to the present no other plan of swarm control has been so generally successful in the hands of the average beekeeper.

So far, we have considered the Demaree method only from the standpoint of swarm control. Let us now study the effect of its use upon the crop produced. It may be said that its use is generally considered responsible for increased yields, but sometimes colonies so treated produce less than untreated ones. During the past two seasons, the Iowa Experiment Station has secured data which may help us to a better understanding of the requirements for the production of a maximum crop when using the Demaree plan to control swarming.

Two of the colonies kept on scales in 1920 were Demareed according to the modified plan already described. These were known as Colony 8 and Colony 28. The chart for 1920 shows the daily loss or gain each. Both were headed by queens reared the previous season and the colonies were




Results of Demaree method of swarm control. Honeyflow indicated by Y, yellow sweet clover; C, catalpa; S, white sweet clover; BW, basswood; H, hubam; P, polygonum (smartweed).

of equal strength on June 1. Colony 28 was Demareed on June 26, but Colony 8 was not. As shown by the chart, the gains made were almost identical up to July 16, when Colony 8 was Demareed. Apparently the treatment given Colony 28 on June 26 had little, if any, effect upon its rate of storing honey, for it continued to keep pace with the untreated colony. But from the very day Colony 8 was Demareed, it began to lag in production, and when the highest point for the season was reached, on September 1, it was 8 pounds behind Colony 28; whereas, on July 15, the day before treatment, it was 4 pounds in the lead, so that its total loss was 12 pounds. Colony records of honey production in 1920 showed that those Demareed early gave uniformly better yields than did those treated later.

During this past season (1921) a similar set of data was secured, except that one colony was Demareed and the other was not. The chart for 1921 shows that these two colonies, known as A and B, were still more evenly matched than were those used in 1920. Both could have been represented almost as well by a single line up to June 25, the time A was Demareed, but from that time on, their courses diverged until July 21, when B, the untreated colony, had a 25-pound lead, which it maintained to the end of the season. The reaction of Colony A to the Demaree treatment was typical of all eight colonies treated at about the same date; and the record made by Colony B was typical for those not treated.

The fact that Colony 8 (see chart for 1920) took a slump following treatment, whereas Colony 28 did not, aroused the suspicion that there may be times when treatment by the Demaree method is of doubtful value. The chart for 1921 indicates that the season's gain for A, the treated colony, was reduced by 25 pounds, which is 30 per cent of its total gain.

The beekeeper's profit depends on the amount of surplus rather than total gain. Between the close of the honey flow on September 1, 1920, and the beginning of the flow on June 7, 1921, three representative colonies consumed respectively 50,53 and 55 pounds of stores, besides what little they were able to secure from the fields at times. This is an average of 53 pounds, of which about one-fifth was consumed while in the cellar. Of course, the honey flow was unusually late in 1921, but just such cases as this show the necessity for leaving the bees at least 45 pounds of stores. Then the beekeeper is entitled only to that part of the gain which lies above the 45-pound line. In the case of Colony A, the surplus was 40 pounds, or only two-thirds as much as that from B, the untreated colony.

Let us now look for the explanation. By referring to the charts, it will be observed that Colony 28, which was Demareed June 26, 1920, did not slacken its storing, and Colony 8, treated 3 weeks later slackened only a little; but Colony A, treated June 25, 1921, took a serious slump, although treated just one day earlier than was Colony 26 the previous year. Then our best comparisons can be made between Colony 28 (1920) and Colony A (1921).

Due to more favorable conditions for spring brood rearing in 1920 than in 1921, as shown in Table 1, Colony 28 was stronger in bees and brood when Demareed than was Colony A, and consequently was better able to **absorb the shock of treatment.** With its superabundance of young bees, Colony 28 did not need to draw upon its field force in order to build comb in the new brood chamber or to care for the additional brood which soon disappeared. Colony A, on the other hand, while strong in field bees was short on wax workers and nurse bees, due to the adverse conditions which prevailed throughout May and early June. So, when compelled to establish a new brood nest, Colony A probably found it necessary to use fielders for comb construction, although they were too old for efficient work in that capacity. A colony must be strong in bees of all ages if it is to maintain its characteristic equilibrium when subjected to the **shock** of Demareeing.

A study of Table II brings out some additional reasons why Colony 28 had smooth sailing all through the season and why Colony A failed to recover from the treatment. Colony 28 was treated 35 days before the end of the heavy honey flow, which means that all the brood in the top story would have emerged. (For the purposes of this article, a honey flow yielding less than 3 pounds per day is considered light and one yielding more is considered heavy.) At least half of this brood emerged soon enough to assist in gathering the crop, while the remainder furnished a large number of comb builders and nurses. Moreover, nectar was available daily for another full month after the close of the heavy flow, as shown by the chart for 1920. But in the case of Colony A (see chart, 1921), the heavy honey flow lasted only 6 days after the Demareeing was done, and in 19 days more the storing season had ended. Young bees were just beginning to emerge in the new brood nest. None of the bees which hatched from the top story were old enough to see field service during the major flow, and very few attained the age of fielders by the close of the period of gain.

From the foregoing it may be seen that the results of Demareeing vary widely and are influenced by a number of factors, among which the following are most important: 1. Strength of the colony in field bees, nurses and comb builders at time of treatment. 2. Length of the heavy honey flow following treatment.

The strength of the colony will depend upon all the factors involved in wintering, as well as those concerned more directly with the building up process. Of the latter group, the following are prominent: (a) the the queen, (b) the supply of nectar and pollen, (c) the weather, and (d) the amount of protection. Colonies that are not strong enough to treat early in the season should not be Demareed at all, but should be kept from swarming by less severe methods.

Since it is desirable to have the longest possible honey flow following treatment, it is important that the Demareeing be done at the very beginning of the honey flow or even a few days before. The beekeeper will be well repaid for the trouble of recording dates when honey flows begin and end, for without such information he cannot expect to secure good crops regularly. In order to obtain best results, Demareeing should be done at least 4 weeks before the close of the honey flow.

Let us suppose the flow lasts only 3 weeks. At the end of this time all worker brood will have emerged from the top story, but only half or less of the resulting bees will have attained the age of fielders, for it seems to be well established that young bees seldom become fielders at less than 2 weeks of age. In the new brood chamber only the very first bees will be emerging from their cells by the end of the honey flow, thus becoming consumers instead of providers. Hence, it seems probable that in localities where the honey flow is of short duration, some other method of swarm control might be used with greater profit; but where the honey flow lasts 4 weeks or more, the Demaree plan may be expected to control swarming with the production of a maximum honey crop.

**Table I. Colony Conditions Through Spring**

| | 1920 | 1921 |
|---|---|---|
| Condition of colonies March 15 | Fair | Excellent |
| Conditions for building up Apr. | Fair | Fair |
| May | Excellent | V'ry poor |
| Strength of colonies, June 1 | Strong | Medium |

**Table II. Duration of Honey Flow**

| | Days | |
|---|---|---|
| | 1920 | 1921 |
| **Before Demareeing** | | |
| Duration of light honeyflow before treatment | 35 | 10 |
| Duratien of heavy honeyflow before treatment | 3 | 8 |
| Total | 38 | 18 |
| **After Demareeing** | | |
| Duration of heavy honeyflow after treatment | 35 | 6 |
| Duration of light honeyflow after treatment | 31 | 19 |
| Total | 66 | 25 |
| Total length of honeyflow for season | 104 | 43 |

**Summary**

Conditions necessary to insure a maximum crop when using the Demaree method of swarm control are:

1. A honey flow lasting at least 4 weeks.

2. Colonies strong enough by the beginning of the honey flow to absorb the shock of treatment.

# SWARM CONTROL BY MANIPULATION

By E. M. Cole

Some years ago there appeared in a government bulletin the following statement: "Any manipulation for swarm control . . . . is based upon the single principle—a temporary disturbance in the continuity of the emergence of brood.'

I did not think until lately that this statement was accepted as true by most beekeepers, but it seems to be, and it is quoted in an article (page 448) in the November Journal with apparent approval.

I did not think then and do not think now that this disturbance of the emergence of brood has any bearing directly or indirectly on the control of swarming, being merely an incidental result of either swarming or manipulation, and I do not know of any reason ever having been advanced showing its relation to swarm control.

Let us take the following manipulation as a basis for discussion: If a colony is dequeened, all queen cells destroyed and a young mated queen of this season's rearing given them, that colony is practically safe from swarming for the balance of the season.

Bearing in mind that it is twenty-one days from laying the egg to the emerging bee, there is no check in the daily emergence of brood for twenty-one days, but the colony has been given a young laying queen in ten days and the full quota of bees continue to emerge daily for eleven days after, and as it is the very height of the swarming season, this colony ought normally to be expected to swarm during that eleven days, but will rarely do so.

The only way that this temporary disturbance of the daily emergence of brood could be held to affect this colony is to argue that bees are able to reason from cause to effect and that, as there has been a temporary disturbance in the daily laying of eggs and hatching of larvæ, there will be in the future a temporary disturbance in the daily emergence of brood. Bees are creatures of instinct, and when this manipulation is performed, one result of which does not occur until a lapse of twenty-one days, it is impossible for the instinct of the bees to react to it eleven days before the result is obtained. Bear in mind that during that eleven days the bees have ample time to prepare to swarm, even to building and capping queen cells.

To apply the statement under discussion to the control of swarming would be equivalent to the statement that the action of a colony of bees could be influenced by a condition that does not yet exist.

Indeed, it would seem to be a sounder argument to say that this method of swarm control was based upon the principle of a temporary check in the daily continuity of the laying of eggs and hatching of larvæ. But I think neither of these touch upon the principle involved.

This method of swarm control, dequeening for a period of ten days and at the end of the period giving them a young laying queen is, in my opinion, based upon the principle that, at the close of the manipulation, the bees have been made to feel that their instinct to increase and multiply has been satisfied.

At the close of the manipulation the apiarist has put the colony in the condition and state of mind, so to speak, of a colony that has swarmed, with the normal period of queenlessness, absence of eggs and young larvæ, and is in possession of a young laying queen. That the old queen has been removed, instead of leaving with a swarm, is not a matter to be reasoned about by the bees; she is gone as she would be in natural swarming. The daily supply of eggs and young larvæ ceases just as it would in natural swarming, and the colony finds itself in the possession of a young laying queen as their instinct tells them they should be.

The fact that none of the bees have gone, as in swarming, does no violence to their instinct, as bees do not take a census or swarm merely to dispose of surplus forces, and the question of crowding is taken care of by any apiarist who is up-to-date enough to use this system of control by giving an abundance of ventilation and storage room, and his reward for this manipulation is a colony with its full working force held together.

If in the above cases the colonies had prepared to swarm at the time of manipulation, and control of swarming was based upon a disturbance in the emergence of brood, these colonies might normally be expected to swarm at exactly the time they would if the manipulation had not been performed, for the supposed controlling factor, a disturbance in the emergence of brood, is twenty-one days in the future, and the instinct of bees cannot react to a condition which does not exist, and they might be expected to swarm regardless of queen or queen cells.

It seems clear to me that in these manipulations swarming has been controlled in a natural manner, the natural steps have been taken, absence of old queens, the eggs and young larvæ disappear, appearance of a young laying queen, and the bees have reacted normally at each step and at the close of the manipulation are in the normal condition of having swarmed.

If "a temporary disturbance of the continuity of the daily emerging of brood" is the deciding factor in the control of swarming, then a colony deprived of its queen and in ten days given its own queen or another **old queen,** ought to be as well settled and as safe from swarming as any. The disturbance in the daily emergence of brood is just as complete and long continued as when a young queen is given them, but in a favorable season they may be expected to swarm again.

It would seem that the efficiency of this last form of control depends on a period of queenlessness and, at the end of that period, finding themselves in the possession of an old queen, thus producing an abnormal condition in the colony, for how in a natural state could a colony lose its old queen and after a period of queenlessness find itself again in the possession of an old queen? Certainly their instinct as a guide would for a time be at fault, but this abnormal condition would pass away and if the period of queenlessness plus the time required to become normal will carry the colony over the swarming season, the method will be effective. But the bees' instinct to increase and multiply has not been satisfied, and in a favorable season they may be expected to swarm regardless of the fact that they have had their full share of "a temporary disturbance of the continuity of the daily emergence of brood."

The above method might come under what has been called "swarm prevention," instead of being classed as "swarm control."

I believe that nearly all methods known as swarm prevention, such as removing brood, giving an extra amount of ventilation, or a supply of drawn combs or full sheets of foundation are based upon the principle of delayed swarming, effected by throwing the colony into an abnormal condition before it has contracted the swarming fever.

When in a natural state did a colony ever find itself suddenly deprived of two or three frames of brood, given largely increased ventilation, or sudenly acquire a large amount of drawn comb?

The effectiveness of these methods is measured by the time required for the colony to again become normal; and if the time required is not sufficient to carry them over the swarming season, they may again prepare to swarm, and some form of manipulation must again be resorted to.

The principles I have tried to present on swarm control in this article seem to be supported by some ideas I have gathered from the writings of J. H. Fabre on the "Hunting Wasps," showing that insects are guided or react in their instincts by what has been done before, and never by a condition to be expected in the future. The next step taken is always guided by the one taken just before.

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### More Remedies for Stings

Louis Kaldenberg, of Iowa, writes that common table salt is the best remedy for stings. He advises bathing the injured parts in strong brine and taking a half teaspoonful of salt dissolved in cold water.

J. H. Anderson, of California, recommends pulling the sting with a pair of tweezers and painting the wound with iodine, saying that the pain disappears like magic.

# BALLING OF QUEENS

By C. P. Dadant

I AM asked for an article upon the "balling" of queens. This technical word is used to describe the peculiar way in which bees surround a queen which they want to kill. The cluster that encloses her is in the form of a ball, sometimes as large as one's fist, and so compact that it cannot be readily scattered.

Rescuing a balled queen is usually done by throwing the ball into a basin of water, but as a basin is not readily at hand, I never had the patience to delay, and have always rescued a balled queen with my fingers, by rolling the ball and pulling the bees apart, for it always seems to me that she should be released as promptly as possible. We have known of bees balling their own mother, when there is excitement; and perhaps Cheshire has given the best explanation of this action. He wrote (Bees and Beekeeping, Vol. 2, page 431):

"Errors made by bees in finding their stand is the main cause, possibly, of a difficulty which has sorely puzzled many. During examination, especially in windy, uncomfortable weather, an encasement of the queen in her own hive is commenced; or when the hive is opened she is found already balled, as though she had been among strangers. The occurrence is comparatively rare, but is observed, as would be imagined, most frequently by far in early spring, for it is presumable that, at this part of the year, bees are least conversant with the exact position of their own entrance. Careful watching of this phenomenon has thoroughly convinced the author that the trouble is at least frequently commenced by an assault made by one or two aliens, which causes the queen's own children, under a misaprehension, to follow suit, until all the colony is in the same condition of ferment as though a strange queen had been dropped amongst them."

Dr. C. C. Miller gave another statement concerning balled queens (Fifty Years Among the Bees, page 78):

"When a colony is being overhauled, it sometimes happens that the queen is found balled. This balling is likely more because the colony, being frightened, is seeking to protect the queen than because of any hostility to her. Fig. 30 (of the book) shows a queen thus balled, or rather the balling bees are shown, the queen being hidden by them. The ball is small, whereas a ball of bees bent on the destruction of a strange queen is likely to be as large as a hickory nut, or larger.

"Whether the object is to protect the queen or not, anything that tends to excite them sufficiently may lead them to do violence to the queen. So when I find the queen thus balled, I always close the hive immediately, not generally touching it again till the next day, when everything will be found all right." (Note—The cut showing the queen balled is not very clear).

Although I cannot very well find fault with our most experienced friend's explanation, yet I must say that in no case did I ever suspect the bees of trying to protect their queen in this way; they appeared too angry and too keen; it looks more as if they meant death to her.

Thos. W. Cowan, one of the most careful writers on bees, wrote (Beekeeper's Guide Book, page 122):

"By untimely manipulation, especially in spring, or when young queens have just begun to lay, or have failed to become fertilized within reasonable time, a queen may be attacked by the workers and hugged to death. This is called "balling" and should be carefully guarded against by not manipulating hives unnecessarily. When balling takes place the queen should be freed from the bees by the application of a few puffs of smoke, or if this fails, the ball can be dropped in water, and the queen caged on a partially-filled comb for a couple of days."

Also, page 141: "It is sometimes very difficult to introduce queens into hives having no young bees, as the old bees frequently "ball" the queen and hug her to death, unless she be released."

As a matter of course, the most frequent balling of queens takes place when two swarms issue at the same time and settle together. In such a case both queens may be balled by bees of the opposite swarm. I have often seen this, and Mr. Langstroth mentions it.

Queens are balled, also, in introducing them to strange colonies. Speaking of the removal of the queen and the substitution of another in her place, Huber wrote (Nouvelles Observations, page 191):

"The substitution of another queen does not produce the same effect (as the return of the mother queen), if she is introduced in the hive within the first 12 hours after the removal of the reigning queen. In such case, the agitation continues, and the bees treat the stranger just as they do when the presence of their own queen leaves nothing for them to desire; they seize her, envelope her all around, and keep her a long time captive in an impenetrable cluster; usually she dies, either from hunger or deprivation of air.

"When 18 hours elapse before a strange queen is substituted for the reigning queen removed she is at first treated in the same manner, but the bees that surround her are sooner weary; the ball which they form around her becomes less compact; gradually they disperse and the queen is at last liberated; we see her walk with languishing steps; sometimes she dies within a few minutes. We have seen other queens escape in good health from an imprisonment of 17 hours, and end with reigning in the hives where they had been so ill-received at first."

Alley (Beekeepers' Handy Book, page 233):

"When queens return from their mating flight, they are sometimes seized by the bees as they enter the hive, "hugged" (called balling), have their wings torn, or otherwise injured and made worthless; and in almost every instance where this hugging takes place, the queens are ruined, it being more than they can endure without injury to their fertility. I have known many young queens destroyed in such a way. This is another strong indication that fertile workers infest a colony and is the reason why the queens are so treated."

Professor Cook (Beekeepers' Guide page 266, ed. 1888), speaking of queen introduction, writes:

"In 48 hours (after caging the queen in the new hive) we again open the hive, after a thorough smoking, and also the cage, which is easily done by pressing the upper end at right angles to the direction of the pressure when we closed it. Now keep watch, and if, as the bees enter the cage or as the queen emerges, the bees attack her, secure her immediately and re-cage her for another 48 hours. I have introduced many queens in this manner, and have very rarely been unsuccessful. At such times, if the queen is not well received by the bees, then she is 'balled' as it is termed. By the expression 'balling the queen' we mean that the workers press about her in a compact cluster, so as to form a real live ball as large as a good-sized peach. Here the queen is held till she dies; or at least I have repeatedly had queens balled and the next day would find them in front of the hive, dead. By smoking the ball or throwing it into water, the queen may be speedily liberated."

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## WATSON LEAVES TEXAS

By Alma M. Hasslbauer

For somewhat over a year Mr. Lloyd R. Watson has been in charge of the Texas State Experimental Apiaries. He was chosen for this position because of his peculiar training and experience which fitted him to become an investigator along lines that would aid the Texas beekeepers in working out their problems of bee behavior and beekeeping practice. He has done both teaching and laboratory work as well as having been a commercial beekeeper himself. Just before coming to Texas he had been connected with the Department of Entomology, Washington, D. C.

Mr. Watson entered upon the duties of State Apiculturist with enthusiasm. His first work was to perfect and put into operation the time-weight recording machine, which he described on page 442 of the November American Bee Journal. Among the improvements that he made upon this instrument was the glass dial box and the housing apparatus which, while providing shelter, at the same time permits practically out-of-doors conditions to surround it and the colony under observation. He has se-

cured a great amount of interesting and valuable data through its use.

The problem of wintering bees in Texas appealed very strongly to Mr. Watson. During the past winter he has carried out some of the most extensive wintering experiments that have so far been attempted in Texas.

He has announced his resignation, to take effect on April 1.

It was his desire to leave much earlier in the year, but he felt that the results of his wintering experiments were of such importance that he insisted on remaining until he could take the bees out of winter quarters and write up the data on the results.

Mr. Watson is returning to his native State of New York to take up graduate work in Cornell University. His many friends, made during his short stay here, are sorry to lose him, but rejoice that he has the opportunity to work towards higher degrees in so notable an educational institution. Mr. Watson will long be remembered with pleasure by the beekeepers of Texas.

# GLIMPSES OF BEEKEEPING IN OREGON AND WASHINGTON

H. A. Scullen, Specialist Oregon Agricultural College

The States of Oregon and Washington are very similar in many respects. Each State is divided north and south by the Cascade Mountains into a western humid region and an eastern arid region. West of the Cascade Mountains rainfall varies from 20 inches to well over 150 inches in limited areas. The average location has a rainfall from 30 inches to 50 inches.

Fig. 1.—Scullen's Bees ready to move to an outyard.

The leading surplus honey plants on the west side of each State are fireweed **(Epilobium angustifolium)**, alsike and white clover. Fireweed is abundant in the burned over timber sections of the mountains, where it is found at all elevations below the timber line. As a honey plant it is comparatively reliable, but occasionally fails. This failure seems usually to follow a cold June or is the result of aphis or thrips working on the flowers. The plant also seems to require considerable soil moisture in order to secrete nectar in any quantity. In sections where the soil is volcanic and very porous it is especially unreliable. The honey is water white, of mild flavor. Hundreds of pounds of this nectar is never harvested, because of lack of bees, since most of the sections where this plant is abundant are out of the reach of good roads.

Alsike and white clover are more or less abundant in the cultivated valleys on the west side of the two States. It is of interest in this connection to note that in Western Oregon and the southwestern part of Washington these clovers yield nectar during June, but in the northwestern part of Washington the clovers are reported as yielding during late June and early July. This condition is true for northwestern Washington and northern Idaho, also. In all sections referred to, however, the clovers are in full bloom during all of June.

Other important secondary honey plants of the western part of the State are Oregon maple, vine maple, madrona, cascara, vetch, snowberry, brambles, and many others.

Foulbrood, especially European, is quite generally distributed over the western side of both States. In many districts it has eliminated all but the experienced beekeeper. American foulbrood from time to time appears in various localities, but is not as common as the European variety.

Fig. 2.—Hive with moving screen prepared for moving.

Most of the beekeepers on the west side of both States are small holders, comparatively few having over 100

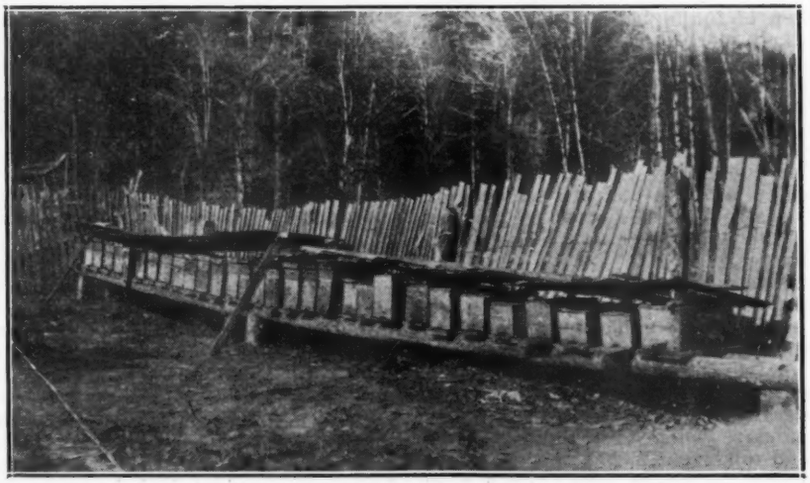

Fig. 3—Such apiaries are still too common in the northwest.

colonies. The opportunities for marketing are slightly better on the west side, but the problems of production are more trying.

As I have already said, portions of both States lying east of the Cascades are arid, rainfall varying from 6 to 25 or more inches. From the standpoint of apiculture eastern Oregon and Washington may be separated into, first, irrigated sections where fruit and truck crops are produced; second, wheat producing sections; and third, the uncultivated portions where grazing is almost the sole occupation.

Of the three, the first is the only region where bees are kept to any extent. Since alfalfa is the leading hay crop and sweet clover has spread into most irrigated sections, these two are the only surplus-producing plants of importance. Where orchards are abundant they generally prove more of a detriment than an asset in honey production, due to the spray poison. In a few limited areas native shrubs produce some surplus of good quality, for example, in the Umatilla Valley. In Washington the leading irrigated districts are the Yakima Valley, small portions of the Columbia Valley and the Walla Walla district. In Oregon we have the northern portion of Malheur County, the Umatilla project, which covers the northwestern end of Umatilla County, and northern Moro County, and the few smaller projects in central Oregon, which give promise of much production in the years to come. Although the writer has not yet had opportunity to visit the Klamath district, reports would indicate that this, too, is in time destined to be a leading honey producing section, due to the large fields of volunteer sweet clover.

Large commercial production is confined at present to Malheur and Umatilla Counties, where there are now many large holders. The beekeepers in the former district are becoming somewhat discouraged, due to the ravages of the alfalfa weevil, which is becoming quite serious.

Most of the honey from these two sections is marketed either through jobbers or through the Oregon-Idaho Honey Producers' Association, however, one large producer in the Umatilla Valley retails largely through the Portland public market.

Fig. 5. Tucker apiary at Prosser, Washington, nearly wiped out by spray poison.

American foulbrood has been an important factor in Malheur County for some time, and in recent years is becoming so in the Umatilla section. Within the last few months this disease has been found in Deschutes County in two yards. American foulbrood has been doing considerable damage in both the Yakima Valley and Walla Walla district for a number of years. It is also found to some extent in and about Spokane.

European foulbrood has never been positively identified in either State east of the Cascade Mountains, to the writer's knowledge.

It has been estimated that there are approximately 10,000 beekeepers in each State, and a total production of honey would probably run close to 60 car loads for each State per year during a period of years. Since a great deal of new land is being put under the ditch for irrigation from year to year, it is more than likely that within a few years the total number of colonies will be doubled.

The cover picture is a typical class in beekeeping at the Oregon Agricultural College. There are over sixty students enrolled in beekeeping. The class shown is examining one of the apiaries of the writer, who is also the instructor.

Fig. 1 shows a load of bees ready to go to the clover field. The four-wheeled trailer shown is a great help when one does not have a truck.

Fig. 4.—Typical fireweed location in cut-over lands in western Washi..gton.

Fig. 2 shows how the writer prepares hives for moving to and from clover.

In the mountains and elsewhere throughout the State we are confronted by such problems and opportunities as are represented by Fig. 3, a picture from western Oregon.

Western Oregon and western Washington have more bee hives, more beekeepers, more disease and a grater variety of flora than any other part of the Northwest.

In Fig. 4 we show a typical fireweed location in the burned-over timber of western Washington. Millions of acres are covered with this valuable plant, but lack of good roads makes much of it inaccessible.

Probably no section of the country has suffered from spray poison to the extent that Yakima Valley has. Fig. 5 is the Tucker apiary at Prosser, Washington, which was all but annihilated in the summer of 1919. This

Fig. 6.—Inspectors looking over a forgotten apiary.

was but one of many to suffer.

Fig. 6 shows Dr. Pressey, of Yakima, ex-President of the Washington State Association, and the writer, who was then inspector, giving a forgotten apiary the once over. The landscape is typical of much of eastern Oregon and Washington not yet under irrigation.

Sweet clover is becoming more and more abundant along the highways and ditches in the irrigated districts of eastern Oregon and Washington, The stretch of beautiful and fragrant highway in Fig. 7 is in Walla Walla County, Washington.

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## A BOOST FOR HONEY

By Joseph B. Milgram

Alfred W. McCann, author of "Starving America" and other books upon food, and pure food expert of the New York Globe, is waging a campaign in favor of the use of honey, especially by children, instead of the refined sugars and starches so common in the American diet.

Mr. McCann declares that the people are fairly stormed by glucose excesses; that glucose is a filler—a symbol of denatured carbohydrate foods, and that 80 per cent of the glucose manufactured from corn starch is absorbed by bakers, confectioners, manufacturers of compound jams and jellies, near-beers and pie fillers.

In all these types of chemically erupted foods, he stated, the tissue salts of cane and corn are ignored as if they had no existence. The disturbing fact in connection with these demineralized carbohydrate foods is the accumulation of evidence supporting the belief that the abuse of refined sugars and starches is the chief cause of diabetes and may be held responsible for the rapid increase of this disease.

Pure honey, on the contrary, Mr. McCann says, is not a demineralized sweet. It contains all the life sustaining properties essential to the bee.

Mr. McCann quotes an authority, Theodore C. Janeway, of the College of Physicians and Surgeons, Columbia University, New York:

"In diabetes the tissues are in a state of partial or complete sugar starvation, though they may be bathed in lymph rich in glucose. The glucose circulating in the blood and not utilized by the muscles themselves for food, accumulates until in excess of the normal upper limit of one part in one thousand.

This excess of glucose in the blood is called hyperglycemia. With long standing hyperglycemia the kidneys lose their power to throw off the excess glucose and the degree of hyperglycemia tends to rise progressively. It is because the appetite is frequently gratified by carbohydrate foods (sugars and starches) that hyperglycemia is increased with no gain to the body in energy.

"Inasmuch as the diabetic has lost his tolerance for sugars and starches, he must be safeguarded from all influences known to diminish his tolerance. Among such influences, clinical experience teaches us plainly that hyperglycemia plays one of the chief roles.

"Failure to institute proper dietetic treatment, or continued self-indulgence on the part of the patient so frequently leads to the development of severe diabetes in a previously mild case, that it is obvious that the weakened power for using sugars and starches is diminished by indulgence in sugars and starches."

Mr. McCann contends that there is a tremendous body of evidence to prove that it is indulgence in "crazy sweets" which sets up the condition now described as diabetes in a half million cases in the United States.

There is only one way to avert this condition, he declares, and that is to substitute pure honey for the chemical syrups.

Mr. McCann blames the parents and teachers for permitting children excessive indulgence in sugars and starches—a course which he states diminishes tolerance and causes mild cases of diabetes to progress to severe cases; that it is this very excess which sets up diabetes in the first place and eventually destroys all tolerance for denatured foods of any kind.

Other authorities are quoted by Mr. McCann to prove that the younger the diabetes patient, the more marked are evidences of excess in carbohydrates, yet children are encouraged to daily indulgence in refined sweets, notwithstanding the abnormal proportion which constitutes the bulk of their breakfast, dinner and supper.

The New York Globe, in whose columns Mr. McCann writes daily, is a powerful organ, with a circulation of approximately 200,000 daily, and the campaigns for better and natural foods which he has waged have created a host of followers and converts. It is through Mr. McCann's efforts that whole wheat has become popular in the metropolitan district, resulting in the announcement recently by the huge Ward bakeries that they would bake daily 240,000 pounds of bread made of this natural, unrefined flour.

The indications at present are that Mr. McCann's latest battle in favor of pure honey will create a similar demand for this wonderful natural food, a situation the bee owners should take advantage of.

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## LETTERS OF HUBER

Continued from April)

### Influence of Harmony in the History of Bees

February, 1829.

Are the people with imagination more or less happy than others? If the pictures which they paint for themselves always come to life, they are surely to be envied, for, being masters of their palette, being always able to selct their colors and assort them properly, their horizon is made up mainly of pleasant perspectives. They are, however, accused sometimes of painting too flattering images and to welcome with too much partiality air castles upon which wise and cool minds would never have stopped.

You see, dear Elisa, that it is of your teacher in natural history and one of the faults which he acknowledges, that it is now question. But do not believe him ungrateful in that which would surely be a great imperfection in his nature. This so-called teacher sees (every day in his life) a thousand reasons for thanking restoring Providence, which knows how to supply consoling chimeras, to those whom just but inexplicable decrees have deprived of realities (Note—Remember that Huber was blind.—Translator.) which have been lavished upon others who would think it impossible to do without them.

This morning, while thinking of you and rereading one of my letters in which I mention music in reference to that made by the swarms which I love so well, the thought came to me that the effect which it always produces upon me is not caused directly by the **voice** of the bees or of their drones, which, in certain occasions are heard in the air above our heads at such a distance that they can be heard only by good ears and seen by good eyes.

But whence does this music come, as well as the impression which it works upon me? My imagination is going to try to tell it to you. Do not too hurriedly reject this idea, a law of physics sustains this weak perception and seems to give it authority.

A resonant body, that is to say a bell, a bass string or a violin string, a flute, a harpsichord, a simple board, a cliff, being struck, produce sounds very different from the principal sound, which is only the product of the vibration of the air which surrounds the resonant body and which is brought to us by the undulations of the circumambient air.

These sounds which reach us are what is called the harmonics of the principal sound or of the resonant body whatever.

These harmonics are very distinct from the body that produces them, for they are always the major twelfth and seventeenth; these two notes, joined with the one from which they derive, constitute the perfect chord, chord supplied by nature, which supplies only that which is beautiful and consequently in tune.

If your harpsichord is in tune, strike the 'do" (C) or any other note of the bass; if you select "do," strike at the same time, with the right hand, the "sol" (G), which is the twelfth, and the "mi" (E), higher up, which is the seventeenth. These notes, so far apart, will form a perfect chord, to me the most ravishing of all when it is performed by 15,000 to 20,000 bees, workers or drones. . . .

Lausanne, Feb. 8, 1829.

For myself, rather than for you, my dear girl, I think best to add a few words to the end of my previous letter; having been hurried by the departure of the mail, or by some other circumstance, I did not end the subject which I had undertaken with you, as I should have done it, and you might very well ask me whether I

have really heard the harmonics to which I attribute the charm that I always experience in the moment of the departure of a swarm. No, doubtless, those harmonics, much fainter than the sound from which they proceed, are never distinct enough for our ear to perceive them and separate them from the principal sound, that is to say that of the resonant body itself. But since every resonant body has its harmonics, their sound certainly reaches our ears, though we may not perceive it.

The three notes which compose it and which, by their reunion, form the most beautiful of all chords, may and must produce upon our nerves, upon our heart and upon our entire being, physically or morally, an effect which every person must have felt and appreciated in his or her way, effect which is not produced and cannot be produced by the isolated sound of the isolated body. To produce the sound which has always charmed me, the principal sound must be united, as it is in nature, with that of its two harmonics.

After having struck one of the low notes of your harpsichord, keep the finger on that key listen to the sound until you can no longer hear it, then your good ear will undoubtedly distinguish these harmonics. You will recognize easily, not the fifth of your "do," but its octave and higher the double-octave of the major third of the principal tone, or the "do" which is still under your finger. Of all the movements of the perfect chord, that which nature offers to us is undoubtedly the most beautiful.

Who knows, and who can tell, the feelings of the swarm, in the harmonious atmosphere with which it is surrounded? Would you not believe and say that this mass of sensitive beings surely experience some modification similar to that which this soft harmony causes in those who feel the impression of it as I do myself? If I had to say what I think in this regard, you surely do not doubt what my answer would be; it would not be in the negative.

After you have breathed, as I have, in the atmosphere of the swarms, the idea of the happiness of all those beings will surely take possession of you; you will be glad that it was granted to them. Penetrated as you are with recognition for all the gifts that are lavished upon us, you will thank the great Dispensator for having overlooked nothing which may make the least of its children happier.

The bees, very irritable by nature, do not seem so at all when it comes to swarming and do not allow themselves the least mutiny or repris ls for the ill treatments which they often withstand. Their mildness at that time allows us to enslave them and to make them our property. There is no doubt that the benefit is in our favor; let us become worthy of it. Let us treat those good bees, not as slaves, but as members of our family, as good laborers whose recognized services should be rewarded.

Lausanne, Feb. 13, 1829.

Do not blame your ear, my dear Elisa, if you have not perceived the harmonics which I have announced to you; it is on the viol, on the violoncello and on large violins that this experiment succeeds best; it often fails on the harpsichord. I transcribe here what Rousseau says of it; it is the exact truth:

"If we vibrate with some force one of the large strings of a viol or of a violoncello, by striking it with the bow a little closer to the bridge than usual, we will hear distinctly, if we possess a trained and attentive ear, besides the sound of the string, at least also that of its octave, that of its octave fifth and that of the double octave of its third; we will even see all the strings vibrate and will hear the sound of all of them in consonance with those sounds. These accessory sounds always accompany a principal tone whatever it be, but when this principal tone is acute, the others are less sensitive to it."

The following is taken from the dictionary of music, at the word "Consonance:" "If I strike the chord "do"; the chords at its octave, at the third "mi" of the double octave, even at the octaves beyond, will all vibrate and resound together; and even if the first chord was alone, one would still distinguish all these sounds in its resonance; this takes for granted a good harpsichord, well in tune.

"The consonances are all produced by the perfect chord, itself produced by a single sound, and reciprocally the perfect chord is produced from the consonances. It is therefore natural that the harmony of this chord be communicated to all its parts, that each of the parts fill its place in it and that no other interval, which does not belong to this chord, should participate in it.

"Thus nature, which has given to all objects of each sense qualities proper to it, has decreed that any sound should be accompanied with other agreeing sounds, just as it decreed that a ray of light should be composed of the finest colors. If we press the question and ask whence comes the pleasure that the perfect chord gives to our ear, while the latter is shocked by the concourse of any other sound, how can we answer except with the question, in return, of why green rather than gray pleases the eye and why the perfume of the rose charms us while the odor of the poppy displeases us?"

My idea that the bees may enjoy their own music and that the pleasure which they find in it, by softening their irascibility momentarily, may render them happier, milder and more tractable, is perhaps, only a dream of my imagination, better fitted for the age when one sees everything of rose color, or sky-blue if you will. I love to think that you may listen with indulgence to that which may be judged by some others more severely.

My life observations have penetrated me with the sentiment that all that comes to us from the divine Author is lavished upon us, as well as upon the smaller creatures, with an endless kindness which can exist only through the omnipotence, which is infinite. I am therefore unable to refuse to estimable beings the enjoyment of pleasure which is in their reach and the result of which is happy for us; no intercourse would be possible between us and the bee species if their swarms preserved, at the time of their departure, the desire to resist our will as they might. See, in this, one additional favor; I have thought that it was worth while to point it out for your gratitude and that of my other cherished children.

(Note—Huber did not then know that which Mr. Langstroth discovered later, that it is the filling of their sack with honey which renders the bees peaceable and that, in order to pacify them, we only need to compel them to fill themselves with honey by frightening them, with smoke.—Translator.)

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## THE MITE AND THE ISLE OF WIGHT DISEASE

By E. F. Phillips

In the February issue of the American Bee Journal (p. 56) there appears an abbreviated translation of an article by Von Buttel-Reepen, from the Archiv fur Bienenkunde. This was read in the original, but as it has now been translated in part for American readers, it seems best to point out certain inaccuracies.

The mite to which V. Buttel-Reepen refers was described in an article from Duchemin in L'Apiculteur (1866, vol. X, pp. 144-146). In the incomplete translation in the American Bee Journal, the portion is omitted in which V. Buttel-Reepen refers to a lack of an illustration which was reported to exist and which would help in identifying the mite. It is indeed unfortunate that the German author did not look up this illustration, which is given in the article in L'Apiculteur to which reference is made. If he had taken this step before writing, he might have been less prone to cast doubt on the work of Dr. John Rennie and his associates of the University of Aberdeen, for certainly the illustration given by Duchemin does not even remotely resemble the illustrations given by Rennie, and more recently by Hirst, of the mite found associated with the Isle of Wight disease. This criticism was written before the illustrations and descriptions of the offending mite were published.

The whole tone of the V. Buttel-Reepen article indicates an unwillingness on his part to give credit to investigators of the British Isles for a really wonderful discovery. Future work may make minor changes in the interpretations regarding the mite of the Isle of Wight disease, but the discovery of this mite and the other work done on it constitute one of the outstanding accomplishments in beekeeping investigations of a decade. This is not the first offense of this kind from the pen of V. Buttel-Reepen, which is so unworthy of a man who has done such excellent work in beekeeping lines. It is quite on a level with his effort to prove that the

honeybee is native to Germany. Evidently V. Buttel-Reepen believes that no other land could produce such an insect. Scientific work should be above petty national prejudices like that exhibited in this article by V. Buttel-Reepen. I am sorry that this translation has appeared in an American periodical, as it is so unworthy of its renowned author and so contrary to easily established facts.

## CONCERNING THE PHILLIPS LETTER

As this matter appears to be more or less a question of international pride, we think best to reproduce the exact text and cut, mentioned by Dr. Phillips, as published in L'Apiculteur of February, 1866, for we feel sure that very few people are in possession of this magazine. Of course we do not vouch for the correctness of the cut, and call attention to the fact that at that time, 56 years ago, the facilities for reproducing micrographs were much poorer than they are today. The reader may then

Drawing of mite which appeared in the French bee magazine in 1866.

draw his own conclusions. Personally, we do not believe that this acarus, found **upon** the bee, has any relation with the Tarsonemus woodi.

### A parasite of the Bee

Extract from a notice by Mr. Em. Duchemin: "I was a witness, in my youth, of the despair of a poor peasant, who found himself suddenly smitten in his interests by the loss of some 30 colonies of bees. He was, of course, seeking to know what might be the cause of his disaster, and attributed it (wrongfully as I ascertained in several instances since) to certain plants of his enclosure, which the poor bees had sucked. The bee is, I believe, too intelligent to make such a mistake. She knows well how to avoid the poisons which might kill her, and may even extract, with impunity, the juice of a shrub called Azalea pontica, mentioned by Xenophon and Pliny. If this bitter honey is poisonous at times, as it proved to be for the three cohorts of Pompey's army, the health of the bees did not suffer thereby.

"The loss of some 30 hives was the consequence of a fact which I observed and which I can now explain:

"The bee has a terrible enemy, almost as deadly for her as cold; her sting is powerless against it; and this enemy was, of course, undiscoverable for the poor man who could see only with his eyes, while it required the power of a microscope to discover it.

"This deadly enemy of bees is an **acarus.** It fastens itself to her and kills her.

"Did the immortal Reaumur mention this parasite in his works? He mentions the drawing of a louse found upon the bees; but this louse does not in any way resemble the acarus which I found. In any case, it is another encouragement for the resolute investigation of bee disease. I attach to this note a considerably enlarged figure of the insect drawn under my care as faithfully as possible.

"Is this microscopic being found only upon diseased bees? How is this invisible and deadly being produced? Is it spontaneously produced upon the body of its victim which it grasps with its claws, and gnaws and pierces to death?

"I have discovered this singular acarus, not only upon bees, but also upon a plant, the **Helianthus annuus.**

"Did the bee deposit this parasite upon the plant, or is it the blossom of this plant which transmits to the bee the deadly parasite?

"In 1864 I spent an entire summer seeking the solution of this question, which is so interesting from every point of view. After having protected the plant entirely from all outside contact, I still discovered upon it the destructive acarus.

"I believe I can affirm that the invisible enemy of the bee has its birth upon the **Helianthus annuus,** and that this plant is therefore destructive of the life of the bee which man cannot protect too carefully."—L'Apiculteur, 1866, page 145.

(We have not translated the remarks made upon this correspondence by the editor of L'Apiculteur, Hamet, for, with his usual lack of discernment, he tried to connect the presence of the acarus with foulbrood. Evidently he had never investigated the latter disease. In no case have acari been reported as existing within the breathing tubes of the bee, such as the English scientists lately found. —Editor.)

## THE CARNIOLAN BEES

By M. B. Wilmer

In the February issue of your journal there appeared a question on the Carniolan bee. The answer stated, among other things, that one of their bad traits was a propensity toward excessive swarming. This induces me to send you my experience with them in conjunction with a "Modified Dadant Hive."

In the spring of 1920 I bought a number of Dadant hives and transferred a colony of industrious hybrids into one of these hives. As soon as they were nicely working the foundation, probably when the combs were half built, I introduced a Carniolan queen. As the hive was furnished with full sheets of foundation, the bees soon built the combs out. I expected no attempt to swarm, since it was a newly established colony and on account of the young queen, and I was not disappointed. The bees worked with great industry, and altogether produced somewhat better than eighteen dollars' worth of comb honey. This was no better than some of my 10-frame colonies, but they had the advantage of being in prime condition for the clover flow. On the 20th of November I put them all in the cellar.

I cannot say they wintered any better than some of my Italians. If anything, they were a little quieter than the others, as they didn't seem to be bothered by the low temperature to which the cellar fell several times.

On the tenth of April I put them on their summer stands, and then they displayed a characteristic which I believe puts them far ahead of any race of bees I have become acquainted with. They worked on colder, darker days than any of the others. They did not have an advantage over the other colonies in protection, number of bees, or stores, for I saw that all colonies were well supplied. When I would see two or three bees leaving and alighting at the Italian and hybrid hives I would see seven or eight at the Carniolan hive. The spring was a little backward, but the bees were coming along in good shape when, on the ninth of May, a large swarm left my Carniolan hive and settled near by. Well, I thought that they were surely starting early enough, and went to investigate. It was my fault entirely, the hive was packed with honey and brood in various stages of development, and there was not an empty cell in the hive. Since fully a month must elapse before the clover flow, I returned the queen to the hive, after killing all cells and put the most of the swarm into a weak colony. I put a super on the Carniolan hive with a number of bait sections in it, and this was immediately occupied. With the field bees that returned from the swarm, if any did, and the rapidly emerging brood, the hive was soon in prime condition. Things went on in this way until the opening of the clover flow, and then about a week after it opened they swarmed again. Before the flow opened I gave all the colonies what I deemed sufficient room, but I had not reckoned with my host when I decided how much room to give the Carniolans. When I opened the hive I found the supers all filled and the hive badly crowded. I cut out all cells and returned the swarm, giving them plenty of room. They did not attempt to swarm again the rest of the season, for I gave them a plenty of surplus space. All hives in the yard are examined at least once in ten days, and I did not even find cells to cut out.

This hive produced over 70 pounds of comb honey more than any of the others, and I think that while this is only one example of what these bees will do, it at least merits a further trial for them. They should be unexcelled for extracted honey production in a large hive. Through-

out the season, I found them to begin a little earlier and work a little later than the rest of the bees. I believe they are worthy of extensive trial and careful selective breeding.

I would like to say a good word for the Dadant hive. The talk about bees stuffing the brood chamber with honey at the expense of the supers is unfounded, at least that has been my experience. Given a **vigorous** queen, and industrious bees, you will never be troubled with your brood chamber being overcrowded, except with bees. The large hive, preferably the Dadant type, has come to stay.

Wisconsin.

## PHACELIA

By H. B. Parks

An article by Alfred Carling on Phacelia in the Western Honey Bee, is very interesting to Texas beekeepers, as we have three species of this genus listed as honey plants in Texas. Two of them are low annual plants bearing an abundance of beautiful blue flowers in spring and early summer. Where these occur in quantities, they add much to the spring stores of the bees. The third plant is **Phacelia integrifolia Torr,** sometimes called Texas heliotrope. This is an annual, growing from 18 inches to 3 feet high. It has a divided leaf covered with wool. The blue flowers are borne on short spikes which unroll as the flowers open. This plant grows in great quantities in limestone soils, in damp or shady places. It is never found in pastures, as stock eats it greedily. While growing sparingly elsewhere, this Phacelia reaches the perfection along the foothills of the Edwards Escarpment. Bees work it very heavily but, as it blooms in April and May, little if any distinctive honey is stored from it. This is one of the native plants that it will pay the beekeeper to grow. It produces quantities of seed, which are easily gathered. If scattered in waste places in summer a good stand can be obtained. As this plant is a winter annual it covers the ground and kills out other and less desirable plants. In turn it dies as soon as it finishes blooming, so that by July 15 the ground is bare, ready for the falling seed. Let the beekeepers who know this plant report their experience with it.

Texas.

## AN EFFICIENT DEVICE FOR FASTENING FOUNDATION IN SECTIONS

By Geo. Harrison, Jr.,

Assistant in Apiculture, University of Maryland

Anyone who finds fastening foundation in sections a tedious job can make an efficient device for this work with material usually found right at hand. This device is quickly made and does not require very much mechanical skill.

For the 4¼x4¼ in. beeway section, cut four blocks from a 13-16 in. thick, dressed board. These blocks should be 3¾ inches with the grain of the wood and 3 15-16 inches across the grain. All corners should be perfectly square. Nail these to a dressed board 2 feet long and 6 inches wide, two on one side of the middle point of the board and two on the other, and 5-16 inch apart. Place the long way of each block with the length of the board and equally spaced from the edges. Nail a strip one-half inch and 17 inches long to the board on each side of the row of blocks and one-half inch from them, and this part of the device is complete (Fig. 1, A.)

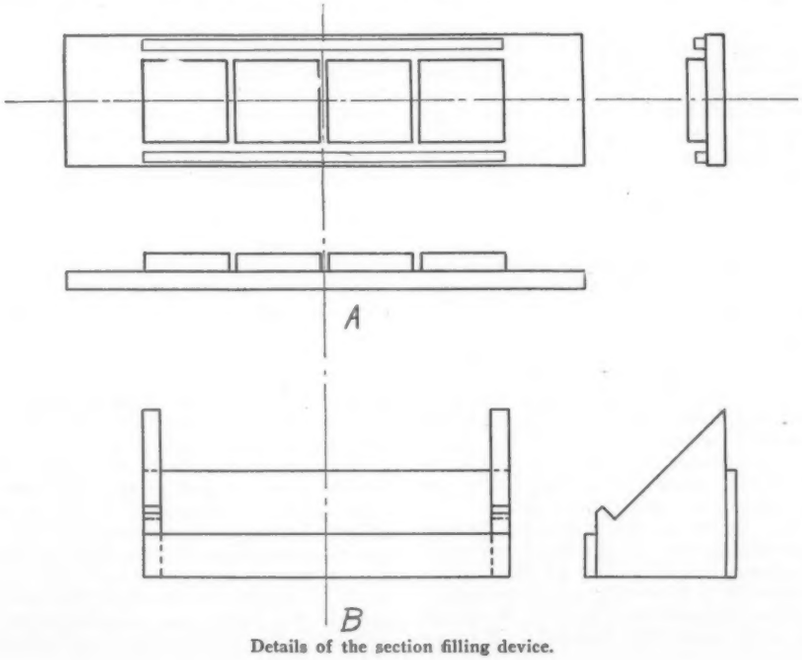
For the second part of the device cut two pieces of dressed board 6 inches by 9 inches. From one corner cut each board across at an angle of 45 degrees. Beginnning at the shorter edge of each board measure one-half inch on the diagonal cut, and draw a line from this mark square with the diagonal. Place a mark on this line at a distance from the diagonal cut equal to the thickness of the board holding the blocks (first part of device) and from this mark draw a line to the long edge of board parallel with the diagonal and saw out the pieces enclosed by the two lines (Fig. 1, B). With two strips fasten these together in an upright position at a distance of seventeen inches from each other (Fig. 1, B) and the device is complete.

To operate, place the foundation spacing board (first part of device) on bracket (second part of device) so that it rests on the diagonal and against the shoulders and with blocks toward you. Lay a section over each block and place section holder (super fixture) upside down over sections. If this section holder is too loose to hold sections firmly against upper edge of blocks, insert a wedge between strip and bottom bar of holder. This will force the sections against the blocks, which insures their being square. Drop a sheet of foundation in each section and with the thumb and forefinger force foundation gently towards section top bar (lower bar as it is on device) and at the same time insert a 4-inch metal blade (a wall scraper such as listed in some supply catalogs is very useful for this) between it and section. When enough wax is melted withdraw blade and quickly press foundation against top bar of section. (Do not bear too heavily on foundation, as it may be inclined to stick to block and not slide easily; also, for this reason, it is better, when possible, to have foundation cold). In this way all four sheets of foundation are quickly fastened.

Turn foundation spacing board around on bracket and sheets of foundation will now be hanging. Remove wedge (if used) from between section holder and strip, grasp end blocks of section holder and, keeping them pressed firmly against sections, lift off all four sections at once. These are now ready to be placed directly in super in their section holder.

Mr. John Silcott, an old beekeeper of Bluemont, Virginia, now deceased, built a device somewhat similar which he used for many years. From this device the idea of building one just as described has been evolved. Mr. Silcott's device had six blocks, which were not placed closely together and, therefore, each section had to be handled separately when placing them in the super.

(We would suggest that, in order to keep the heated wax from sticking to the blocks the latter might be slightly moistened with soap suds.—Editor.)




Details of the section filling device.

### Massachusetts Beekeepers

The Eastern Massachusetts Society of Beekeepers, at their annual meeting, elected F. Lathrop Davenport as President and Alva Morrison as Secretary. The field day of the association is to be sometime the last of July.

## ARE BLACK BEES DOMINANT?

By E. G. LeStourgeon

The suggestion made on page 108, in the March number, by Jes Dalton, that the drone may be of some value, after all, and that this apparently useless, lumbering fellow need not be written off as a total loss, has been very interesting. Beekeepers have carefully watched every inch of comb space and eliminated "father" wherever and whenever they could find him. In the meantime we have requeened our apiaries again and again with high-priced and (supposedly) high-bred queens from the best breeders we could find or hear tell of. Yet just as soon as we let up on our eternal vigilance there were black bees and hybrids flying in and out of our hives again.

No one can estimate the countless thousands of black and hybrid queens killed by beekeepers every year, everywhere and replaced by golden or three-banded mothers. For more than a generation there has been a constant and a relentless war waged against the black type of bee. Yet all will agree that in almost any apiary a truce of a year or two will see the old type begin to reappear and that the original color and characteristics seem to persist in becoming dominant.

This phenomenon is too well known and too universal in occurrence to demand any discussion. Had there not been some fundamental error made by beekeepers in their manner of breeding or, failing in that, if there is not some dominant handicap placed upon it by the acts of man, the black bee could long ago have been expected to disappear from our continent.

The reason must be in the drone. When we superseded the long-horn cow with the beef type of today we did not do it by importing heifers. We turned sires onto the range. When we eliminated the razor-back hog and the mustang pony it was the same. Of course we did then what we cannot do with bees, we eliminated all other males and thus had a much easier problem. Not being able to cut off from access to our young queens the native drones, it would seem that beekeepers have done the next best thing by slaying wholesale the black queens and replacing them with the yellower types. For forty years this has been done again and yet again. One would have said that surely by this time the wood lot and the caverns would be inhabited by the offspring of these imported bees and that not only from our apiaries but from the "wild" bees as well could our virgins be expected to find pure or semi-pure matings. It is true that there has been some degree of hybridization among the wild bees, but hardly as much as might be expected when one takes the facts into consideration. In fact the wonder would seem to be that there are any blacks or hybrid bees at all.

The queen bee has a great influence upon the future of the race, we must all admit, but if we lay all the weight of providing posterity upon the queen we have ignored one half of the great law laid down by Mendel. We are actually in our practice forcing the daughters of our queens to mate with the least desirable males in our apiary or in our neighborhood. We keep our best colonies from swarming if it is humanly possible to do so. We ruthlessly cut out all drone combs or slice off the heads of all drone larvæ. The weakest and least fit colonies are the ones that get "neglected" and swarm if any of our bees do so. The oldest and poorest of our queens raise the drones that escape us. If we do not raise the black and troublesome ne'er-do-wells ourselves, they come to us from the small apiary of our farmer neighbor or the trees in the wood l t. It is well known to the breeder of bees and to any careful apiarist that the old and failing queen or the poorest and most unfit colony in the yard is the one most likely to raise an excess of drones. We also know that black bees and their hybrids seem to produce more drones than our prized Italians. And in the face of that certain knowledge we continue to destroy every square inch of drone comb —in our best colonies first—because we work them more carefully.

If any hive in the yard is permitted to have crooked and imperfect combs it is the weak and most useless colony. Our Italians are too valuable to be neglected. They are given the newest hive, the best combs that come back from the extractor house; the full sheets of perfect comb foundation. Nothing is too good for this wonderful old mother or that recently purchased queen from a distant and famous breeder. We save the least desirable combs by putting them on a weak or failing hive and then during the rush of spring work we forget all about them until some fine morning they surprise us all by casting a miserable little swarm with its attendant drove of worthless drones.

Some there are who claim that the black drone is a dominant type and persists because he is better fitted to survive. Those who believe the black to be the stronger and more vigorous type claim that one can stand in an apiary in the mating season and note that the black drone is noisier and swifter in flight than his lighter colored cousin. They say that the Italian drone is lazy and cumbersome in flight and not nearly so alert to pursue the queen as the native drone. If this is proven to be true we are waging a losing fight against one of the fundamental edicts of nature—the law of the survival of the fittest. I hope not. I would rather believe, as I have hinted above, that we have fought down the desirable drone and left the way open for the apparent persistence of the less desirable type. At least we need not despair until we have tried out somewhere a faithfully conducted series of experiments in producing drones from our more desirable colonies and at the same time fight all the harder against the possibility of drones being produced from our poorest hives and weakest strains. Up to this time I am afraid that we have killed the best and permitted, if indeed we have not unintentionally fostered, the persistence of the unfit.

## PARAFFINE ON TOPS OF SECTIONS

By B. F. Smith

In 1919 we read about paraffine being applied to tops of sections to keep the bees from staining them, and as it was a western idea we decided to give it a trial. We purchased a ten-pound box of Par-a-wax and by melting this in a basin over a gasoline stove applied it to the tops of some 250 supers of sections which had been previously filled with foundation and the springs and follower boards put in place. If I remember costs, this cost about 25c per pound and made the supers cost about 1c each for paraffine. We found a large percent of the paraffine soaked into the wood and secured best results by applying as hot as possible, using a good quality 3 or 4-in h paint brush. We find the hot wax very destructive to any brush, but old paint brushes, if proberly cleaned, now answer the purpose. At cleaning time we clean the entire top of a super with a cabinet scraper and find we only get back about one-sixth of an ounc from each super, while 28 sections take about three-fifths of an ounce to coat. The paraffine recovered is not marketable and should not be mixed with wax intended for foundation, but can be used for fastening foundation into frames with no bad results.

For the next season we bought 215 pounds commercial 118-degree paraffine and used it all except possibly six pounds and now think it as necessary as bottom starters. We find if sections are paraffined before giving to the bees and the flow stops so they are not filled that season, we can use them again next year, and after scraping they are as white as ever. We figure it more than saves the price of paraffine in sections, to say nothing of looks and labor in cleaning. Prices on wax in bulk in 1920 were 15c per pound and the freight, while this year we are only paying 10 cents, which reduces the cost of paraffine to less than one-half cent per super, while the item of labor does not run very high, as you paint it on just as fast as you can, and if you spill or spatter some, it does no damage.

Montana.

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## A CONVICT BEEKEEPER

By Frank Stirling

Located in the north central part of this state, and often alluded to as the "pen," or "stockade," is Florida's biggest farm. Here, near the town of Raiford, the State of Florida has established a prison on a 20,000-acre tract of land, and this land is being cleared and worked scientifically and successfully by 470 convict workers and the amazing thing about it all is that there are no guards with guns to see that they behave, for this prison is operated under the "Honor System."

In one corner of this immense tract is the prison farm apiary, and the apiarist in charge is a most interesting individual. He is, of course, an inmate, a convict serving a long sentence term, but you forget that part

of it after you have spent a few minutes with him, for instead of seeing in him a felon, a criminal, a social outcast, you see only an earnest, enthusiastic beekeeper, whose only object in life is to build up and to maintain one of the best apiaries in Florida and, incidentally to "back up" the humane warden of this penal institution in his effort to return 98 per cent of the prisoners to society, better men than when they entered the prison.

Mr. ——, the apiarist, is running for section honey only. The bees build up in the spring time on the brier-berry, wild plum and Andromeda, being strengthened to such an extent that by the time the gallberry and scrub palmetto come in flower the section supers are filled rapidly. Titi is also a valuable source of nectar on the prison farm.

Florida.

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## THE NEW TREATMENT FOR EUROPEAN FOULBROOD

By the originator, W. H. Lewis

It was in the fall of 1920 that I intimated to a few that European foulbrood had been successfully eradicated from the hive as far as I could then determine by the use of "B. K.", a disinfectant put up by the General Laboratories, Madison, Wis.

Numerous strengths were used on 24 infected colonies, which eventually cleaned up and increased so that they stored an abundance for winter. Beyond the fact that the disease had been apparently killed, nothing as regards the most effective strength of solution or method of application was accomplished the first season.

Disease reappeared in two colonies early last spring, which I believe was carried over from the previous fall, not having been thoroughly cleaned up. One of these, which was very weak, was united with the other imperfect colony and treated. It was clean in the fall.

During the past season it became apparent that disinfecting had no effect on sealed diseased cells, and treatment was continued two or three times at intervals of a week, or until all the diseased cells were opened; also the spring of 1921 was cold and wet and it proved useless to treat colonies during periods of inactivity, as these diseased cells were not readily opened.

Early in 1921 a start was made on further experiments to determine the most effective solution, but was abandoned for a time on account of unfavorable weather conditions. Weak colonies were often found to have deserted the brood nest after treatment.

After weather conditions were a little more favorable an attempt was made to overcome some of the disabilities mentioned above. Finally colonies were successfully treated with one operation, whether weak or strong, or the absence of a honey flow.

I don't believe it is necessary to destroy combs that are in fair condition. Last May I put 50 two-pound packages of bees on surplus combs, every one of which had come from infected colonies, treated once, and some of them twice, and disease did not appear in any of them. Also, I took a comb in fair condition from the weak colony I had before united, as stated above, opened every cell containing a dead larva, treated it twice with a pretty strong solution, and put it in the brood nest of a clean colony, and it did not carry disease.

I have made it a practice during the past year to look over every comb in the brood nest once a week. In the latter part of July and first part of August disease appeared in eight of these packages, on the second set of combs built from foundation.

I am satisfied that this disease came from the outside, as it was a time of great scarcity of nectar and a lot of robbing was going on and there were infected colonies in every direction from me.

These eight colonies, with but a few diseased cells in each, were treated as soon as found and in every case a complete cure was apparently effected.

I refer to European foulbrood only. Experiments with American foulbrood have not yet been thoroughly tried out, but so far have proved of no value.

So far, I cannot claim that this work is anything but experimental. It is possible that a new solution for this particular purpose will be put on the market with full directions for use.

But I feel that a great advance has been made in treating the disease, that a great saving in combs is also effected. In the future I have not much fear of European foulbrood.

I would caution against the use of any home-made disinfectant, as it is impossible to secure uniform strength except in the laboratory, also the home-made article is very unstable and will have to be made up every day or two.

The apiarist must be careful, competent and thorough, or else he will scatter more disease than he cures.

In conclusion, I wish to thank those who have successfully tried this remedy for their efforts, and hope that none will, as in the case of a prominent journal, adversely criticize what they know nothing about only to get badly "balled up" in their argument at the same time.

Note.—In the excellent article by A. C. Miller he says that he never saw colonies "right about face," clean up and show hustling energy any more suddenly than after applying this solution, which has also been noticed by me. It seems to stimulate to greater energy.

But when he states that he had used "full strength" solutions without harmful results I feel that a little caution should be used. Hypochlorite solutions, if I am right, are non-poisonous, but some are very caustic. "Full strength" solutions might be used without harmful results, but I know of serious losses from such practice, which proves, according to my opinion, that there is a vast difference as to what is "full strength."

In the "Editor's Answers," to make syrup for feeding you say "honey which you know to be free from germs," etc. Please try four ounces of "B. K." to every gallon (two of water to one of honey) and I don't think you will need have any fear of foulbrood.

In one trial by me there was no infection carried.

British Columbia.

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## DISEASE CONTROL

By C. E. Fowler

On page 11, January issue, Frank C. Pellett writes a very good article on disease control.

A bee inspector has a hard job and generally too much work to do, and unless the beekeeper helps him he cannot do much.

A few years ago I did not really know a thing about foulbrood, although I had read a lot about it; but as I never expected to see it, what I read went in one ear and out of the other.

One day, while looking at my bees, I saw some peculiar brood and sent a sample to Dr. Phillips, and he said I had European foulbrood; then I sat up and took notice, and sent for E. G. Carr, our New Jersey deputy bee inspector. If you have seen him or his picture, you have noticed that $1,000 smile on his face.

He came to look at my bees and about one-half (about 10) were affected. Then I went with him for two days (within 5 miles) and European foulbrood in two other places was all that we could find.

One man had 10 nice swarms and I helped him cure them, and he had two left when we got through.

The other man had 51 swarms in the fall before, and 25 died in the winter, and out of the 26, 20 were diseased. One swarm was in an old Root chaff hive, one-half dozen in immovable Langstroth hives, and the rest in soap boxes, nail kegs and lard tubs. One lard tub had burst, and he had put a new lard tub on top. He had done nothing to his bees for several years but hive some of the new swarms, and Mr. Carr gave him six weeks to clean up. I went up to his house to see how he was progressing. He was doing nothing, **but was going to soon.**

I offered to buy them, but he would only sell part of them until the six weeks were almost up, when I bought them for $15. The six that Carr had marked O. K. were all diseased.

I drove all the bees out and put 4 pounds of bees in a new hive until I had 12, but I should have put 8 pounds in each.

I put new queens in and before the new bees commenced to emerge there were only two pounds in each, and as the bees were trying to supersede one-half the queens, I doubled up to 6 swarms.

I afterwards found disease in two other places, six miles from mine. One lot all died out, and the other moved 15 miles away; the last one had 40 colonies in box hives.

Since then I have not heard of any diseased bees within ten miles.

If I had not done what every beekeeper should do, this place would be

full of disease today, as Mr. Carr has six times as much territory as he can cover.

I lost one-half my bees, but I learned enough about bees to pay me for my trouble, especially the value of good young queens.

The best way to clean out disease is to teach beekeepers how to inspect and cure their own and their neighbor's bees.

New Jersey.

# THE EDITOR'S ANSWERS

**When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.**

### Package Bees

I want to start up on a small scale this spring or summer. I want to get a few warms during the swarming season. Would you advise buying packages? It is practiced some, I know, but with what success I do not know.

IOWA.

Answer.—Packages of bees by the pound are very good to start with, if you have hives and comb foundation and are prepared to feed the bees till the crop is on. Some beekeepers have been so successful that they try to sell their own bees in fall, so as not to take the risks of wintering, and then buy packages in spring, from the South. But we believe there is more regular succes in preserving our old colonies and buying additional bees from the South when needed. If you have had practice in beekeeping you will have no trouble, provided you do not order your bees too late. There are times when the Southern breeders are so crowded with orders that they cannot fill them all, and it is best to order ahead of time.

### Bees in France

1. Do you think that in our region in the southwest of France, bees may run risk of dying if they fly out on a fairly warm forenoon and the weather gets cold suddenly. The greatest variations in temperature which I have observed are the following:

8 a. m.—12 degrees C; 54 degrees F.
10 a. m.—16 degrees C; 61 degrees F.
Noon—10 degrees C; 50 degrees F.
6 p. m.—9 degrees C; 48 degrees F.

In this season, end of February, beginning of March, there are alternatives of sunshine, wind and rain.

2. Do you believe that claustration of hives is a useful method to avoid a loss of bees? It consists in confining the bees in their hives after having ascertained that they had enough flights at the end of the winter for emptying of their bowels. They are shut in till the blooming of cherry trees, the hives being opened only in very fine weather. Here at the beginning of March, plum trees blossom, then the peach trees, cherry trees, pear trees, currants, maple trees, etc.

3. To your mind, what are the best forms for a claustrating apparatus?

FRANCE.

The foregoing questions come to us from across the seas, but as they tough a question which is but little debated on this side of the Atlantic, we are glad to give them, with our reply. Those of our readers who have experimented in this will confer a favor by giving us their experience.

Answers.—1. The degrees of temperature which you mention do not appear to be objectionable. When the sun shines, if there is but little wind, at a temperature of 54 to 61 degrees F., the bees do very well if they are not compelled to work in the shade, for there is always a great difference between the sunshine and shade. The wind has quite a little influence, and I have sometimes noticed that fruit trees bear a plenty of fruit on the side which is sheltered from the north wind. When the weather turns cold suddenly there is a danger of losing bees. In fact that is what causes what is called "spring dwindling."

2. Claustration of hives was first devised by Mr. Gouttefangeas, living in the mountains of Auvergne, where spring is slow and weather changes frequent. We mentioned that system in our Langstroth-Dadant book (L'Abeille & La Ruche), but we have seen very little of it. The Swiss tried it and didn't appear to like it. In our country, Illinois, and farther south, on the 40th degree of latitude, the sun has too much power to make it advisable to confine bees when the weather is at all warm. You are on the 45th degree, at about the same latitude as northern Oregon, southern Idaho, central Wisconsin, north Minnesota, etc. In all those countries there seems to be no tendency to confine the bees for fear of losing them. In fact they believe that the bees will suffer more from restlessness than from the loss of a few chilled workers, whenever the warmth of the sun induces them to fly.

One of the greatest incentives for bees to venture out when the weather is cool, if there are no flowers yet, is the necessity of getting water for brood rearing. This may be partly obviated by feeding the colonies in the evening with warm and well diluted food. If it is given in small quantity in the evening, the excitement is over by morning and that liquid food replaces the water which they do not have.

3. For claustrating the bees within the hive, any arrangement which will give them air without light is best. If they see light, they are sure to worry. Be very slow about adopting claustration on a large scale until you have given it a trial. Do not, by any means, confine your bees to the hive when there are flowers in the field and the sun shines.

### Starters or Full Sheets

1. After removing barriers of sealed honey in frames from brood nest, where should the new frames be placed so as not to disturb or interfere with the laying of the queen?

2. Will the bees draw out just as nice combs from starters in wired frames as in frames without wire? I would like to wire a few frames and use only starters, instead of full sheets. I use starters in my system of swarm prevention and later I will use these combs for extracting, hence my desire for the wiring.

3. In your experience with the Modified Dadant hive, do you not have quite a bit of trouble with the bees forming barriers of sealed honey on each side of the brood and thus causing the queen to go into supers?.

SOUTH DAKOTA.

Answers.—1. If I understand this first question right, you wish to know where to place new frames, after removing combs of sealed honey from the brood chamber. The answer depends upon the time at which you remove these combs of honey. If it is done at the opening of the honey crop, when the hive is populous, it is as well to place these new frames in the center of the brood nest; as the queen begins to lay in them at once and the bees draw them out promptly. But it may be that you wish to give the colony only starters. In that case they would build a large amount of drone comb and it would not pay to put them in the center. But if you use full sheets of foundation and alternate them with combs of brood you will increase the laying of the queen. Otherwise, better put them at one side.

2. If you use only starters, it is not necessary to use wires at all. Wires are needed because the bees often load down a sheet of foundation before drawing it out at the top. But naturally built comb is usually drawn out as fast as built. You will find, with the system you mention, that your bees will build altogether too much drone comb.

**PROGRESSIVE BEEKEEPERS**
**Jobbers, Wholesalers and Conservative Beemen use**

**SOUTHLAND QUEENS**

**Bred for Service**

**Guaranteed Satisfaction** **P-r-o-l-i-f-i-c, Hardy**

Coversdale, B. C., Canada.

I got the queens on the 18th. Only six (6) days on the way here. They came in first-class shape—not one dead bee in any of them. The queens were very fine. The best yet from a queen breeder.
I'll recommend you to the inspector and he will direct them to you when they want good queens.
(Name on request).

SPECIFY SOUTHLAND QUEENS.

**Box 585 THE SOUTHLAND APIARIES, Hattiesburg, Miss**

3. No, we do not have that trouble. It may be due to locality, or to system. In fact, in our case, the bees usually put too little honey in the brood chamber for winter, unless we crowd them for room near the end of the crop.

### Starting with Bees

1. What type of hive (number of frames) would you suggest that I start with?
2. Would it be best to buy nuclei, or just the packages? In either case how many pounds of bees is best?
3. How many colonies would it be wise to try at first?
4. If you give such advice I would like to know from whom to buy. IOWA.

Answers.—1. The most popular hive is the Langstroth. Do not use any with less than 10 frames, 12 or 13 frame still better. The deeper hive, Dadant style, has 11 frames, or 10 frames and a division board, and is equal to about 13-frame Langstroth.

2. If you can get nuclei, they are better than bees by the pound, but they are also more expensive, owing to cost of shipment. If you cannot buy bees within easy distance, better buy 2 or 3-pound packages. One pound packages are too small for sure success. Of course you must supply them with combs or comb foundation and see that they are sufficiently supplied with feed till the crop begins.

3. Do not begin with too many bees, as you need some practice, and you may make some blunders which would be expensive if made on a large scale. A half dozen hives will do very well to begin with.

4. As to where to buy, it would be unfair to advertisers to recommend any one of them. Those who advertise in the magazines are supposed to be reliable.

### Bees in Room

Having no yard, roof nor porch of any kind, and knowing nothing whatever of bees, I would appreciate your telling me if it is advisable, or possible, to build a small room about 4x6 feet in one corner of a large room that is not used much, and have the bees enter through a window in the second story. Living in a large studio in the center of town, is it possible for my bees to go any distance and return? Am very much interested, but know nothing as yet. Thanking you. KANSAS.

Answer—Yes, it is possible to keep a hive or two of bees in that way. In fact, if you can make channels from the window leading to each hive, you might keep as many as the room will hold. But the bees of one or two hives would probably go in and out through the window without mixing to any amount. It would be best, in that case, to remove the sash, so they may not worry upon the glass. Some people keep bees on top of a flat roof and succeed well. Chas. F. Muth kept an apiary of some 30 colonies on the flat roof of his dwelling, in Cincinnati and succeeded. Bees will find their way easily in and out in a medium sized city like yours. You might also place the hives along the outer wall and have entrances through the wall, as they do in house apiaries, in Europe especially

### More Men for Iowa

In addition to the staff of men mentioned in our January issue, the Iowa College of Agriculture has recently appointed D. M. Hall and W. E. Dittmer as extension specialists in beekeeping. The demands for assistance from the Extension Department have increased so rapidly that more help is necessary.

Professor Paddock advises us that it is the plan to devote three acres to a honey plant garden this season. There is much interest in new plants which are valuable for nectar and at the same time useful for other purposes. It is hoped to assist in bringing such plants to the attention of Iowa farmers and thus increase the available forage for the bees.

A new honey house will be built, 24x50, on a permanent location adjoining the test plots. Iowa beekeepers are to be congratulated on the development of the apicultural work at the State College.

### Beg Pardon

On page 116 the editor reported having been served honey on a dining car marked 'Bunni Hunni," coming from California. It was "Sunni Hunni" instead. We stand corrected.

MONEY SAVED **BEE SUPPLIES** TIME SAVED

Roots goods at factory prices with WEBER'S Service

Send us a list of your wants and we will quote prices that will save you money

**C. H. W. WEBER & CO., 2163-65-67 Central Ave., Cincinnati, O.**

## FOR MAY DELIVERY

One vigorous Italian queen, one frame of emerging brood, one pound bees. Price complete, f. o. b. Bordelonville, $5.00. Additional frames or broods, each, $1.00; additional pounds bees each, $1.00. Queen introduced and laying enroute to you. Safe delivery and satisfaction guaranteed. No disease, reference given. Orders booked one-fifth down, May delivery.

Read what this customer says:

"Mr. Jes Dalton, Bordelonville, La. Enclosed is deposit on 2 packages for May delivery. The one package I got last spring increased to 14 colonies and gave me 85 pounds of comb honey. Respectfully, A. Russell Paul, Belvidere, N. J."

This shows what these balanced packages can do. And this:

"St. Thomas, Virgin Islands, U. S. A. Mr. Jes Dalton, Bordelonville, La. Dear Sir: The 2 packages arrived last night and upon examination I found about a dozen dead bees in one and about 200 in the other; quite a bit of sealed brood, some eggs and small larvæ. Very satisfactory considering the length of the shipment. Both queens had laid en route and there was plenty of honey in the combs. "Yours, Axel Holst."

This shipment went by rail via New Orleans and New York, thence by steamer via Porto Rico to the Virgin Islands; were in the case 23 days in August. How is this for delivery? If they survived this trip in good condition, they will go any place in the United States. Send for address of other satisfied customers. Complaints settled through the American Bee Journal.

Be sure to mention the American Bee Journal when writing.

**JES DALTON, Bordelonville, La.**

# DON'T BE CONFUSED

¶ In buying a larger hive than the ten-frame Langstroth hive. Quinby invented an eight-frame hive with frames about 11¼ inches deep. It was long ago found inadequate in size and was made into a ten-frame hive, a size we have offered for some years.

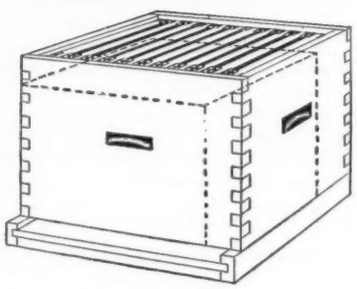
¶ Charles Dadant found the ten-frame Quinby depth hive needed another frame. He also found it a beekeeping necessity to change this hive further, and evolved the 1½ inch spacing from centre to centre of the frames. This is the **real principle** to be considered in the

## MODIFIED DADANT HIVE

**(REGISTRATION APPLIED FOR)**

Modified Dadant Hive

| | |
|---|---|
| Hive - - - | $5.65 |
| Two Supers - - | 3.30 |
| Total - | $8.95 |



Langstroth Hive

| | |
|---|---|
| Hive - - - | $ 3.95 |
| Three Bodies - | 5.70 |
| Excluder - - | .70 |
| Total - | $10.35 |

¶ Consider the cost of the only hive which has these principles made into it as does this commercial beekeeper known all over North America. (See price comparison above.)

1351 Carson St., Victoria, B. C., Canada
January 25, 1921

Dadant & Sons,
Hamilton, Illinois

Gentlemen: In your catalog you say the price of a Dadant Hive may seem high, but that refers to body only. To me a complete hive is one that has all the requisites for the production of one hundred pounds of honey. In the case of a Dadant Hive it means one brood chamber and two supers. In case of the ordinary hive as now managed it means four stories, two of these being for brood chamber. Just itemize the total cost of a complete hive, and I think you will find the Dadant Hive leading by a few dollars.

Yours sincerely,
F. DUNDAS TODD.

### The Large Hive for Extracted Honey Production

Among the reasons why the Modified Dadant hive deserves a trial, especially where present equipment is not giving satisfaction are:

Deep frames 11¼ inches. Frame space ventilation, swarm control easier, 6¼ in. extracting frames.

Large one-story brood nest, adequate winter stores, greater brood room, standard covers, bottoms.

Present equipment may be used as super equipment on Modified Dadant brood chambers. Covers and bottoms for this hive are the familiar metal roof cover with inner cover and regular standard bottoms, except for larger dimensions.

The standard of workmanship is "Beeware." Write for free booklet on this hive to

## G. B. LEWIS COMPANY, Watertown, Wis.
## DADANT & SONS, Hamilton, Ill.

### Convention Schedule

The American Honey Producers' League, through its schedule committee, is continuing its efforts to arrange a national schedule of consecutive beekeepers' meetings and the committee has sent out a series of questionnaires to all of the State associations. Any Secretaries of State Associations who have not received this questionnaire should write to H. F. Wilson, University of Wisconsin, Madison, Wis., and give information as to the time of year when meetings are held and whether or not your association would like to be included in the schedule of the American Honey Producers' League.

### New Sign for Honey House

Early this week Coyne Brothers, the house that has come to be known as the "Honey House of Chicago," put up a changeable letter sign in front of their store, boosting the consumption of honey and outlining its merits for medicinal purposes as a cure for influenza, colds, etc.—Chicago Packer.

### Plenty of Maple Syrup in 1922

Indications are that the maple syrup harvested for 1922 will greatly exceed that of 1921. Michigan syrup opened with a price of $2.75 a gallon, declining to $2.50 after the first week. There is no indication that the price will go much below this figure.

Maple sugar was worth, on April 1, 35 cents a pound. The spring has been much more favorable this year for sap, owing to the many freezes and thaws.

### Apples Mostly Disposed of

Most of the apples have, by this time, moved from producing states to the terminal markets.

The 1921 crop has required 82,146 cars, as against 102,713 cars for the year previous.

Of the total of over 82,000 cars in 1921, 31,162 cars, or over one-third. were shipped from the State of Washington. Although the crop of the whole country was much smaller in 1921 than in 1920, that of Washington was larger by almost 10,000 cars.

### Butter and Honey Prices

According to a German publication, "Bienenzucht im Theorie und Praxis," the price of honey is now 12 to 18 marks (6 to 9 cents) compared to butter at a price of 45 marks (22 cents).

Ordinarily butter and honey prices range nearly the same.

The low price of honey is laid as much to the speculation and to the price cutting of the beekeepers of some sections of Germany as it is to the enormous imports at low prices.

### The Sugar Tariff

The "American Committee on Cuban Emergency" is much concerned over the proposed rate of two cents per pound on sugar in the Fordney tariff bill.

They suggest that on proposals of the Senate Finance Committee the Cubans were led to believe that there would be a reduction in the tariff to 1.4 cents per pound if the Cubans would promise to restrict their output to 2,500,000 tons in 1922.

They claim such restrictions of production have been carried out in Cuba, but that the effort for the 2 cents per pound tariff still continues.

Cuba's production of sugar has run as follows:

1898—315,000 tons.
1914—2,428,000 tons.
1921—3,936,000 tons.

### Value of Honey

The Hercules Health Magazine, of Chicago, a small periodical, is devoted to the pushing of natural foods, which are of special value to the human system. They describe honey as rich in organi salts, natural sugar, and beneficial acids, of which formic acid is one, and is very nourishing, tonic to the generative system, and slightly laxative.


**BURLESON'S OLD RELIABLE THREE-BANDED ITALIAN QUEENS**

NONE BETTER

Not as cheap as some, but worth the difference. I guaranteed them to be absolutely free from brood diseases.

**These are my 1922 Prices:**

Untested ----$1.25 each, $13.50 per doz., 25 or more $1.00 each
Select Untest..$1.50 each, $15.00 per doz., 25 or more, $1.15 each
Select Tested----------$3.00 each

Considering the high quality of my queens, combined with service and reliability, justifies the above prices.

SEND ALL ORDERS, TOGETHER WITH REMITTANCE, TO

**J. W. SEAY, Mgr., Mathis, Texas**

T. W. BURLESON, Waxahachie, Texas.

**MR. BEEKEEPER—**

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. *Write for free illustrated catalog today*

***We pay highest cash and trade prices for beeswax***

**LEAHY MFG. CO., 90 Sixth Street, Higginsville, Missouri**

J. W. ROUSE, Mexico, Missouri A. M. HUNT, Goldthwaite, Texas

### Clemons Supply Co. Reorganizes

The C. C. Clemons Produce Company, of Kansas City, has recently reorganized, retaining, however, the same name as formerly. Mr. E. J. McNamare, the former manager, retires, after a long term as director. The Clemons Company discontinued the handling of supplies several years ago, and now devote their efforts wholly to the handling of produce.

### Good Prospects for Maple Sugar in Michigan

Advance reports from the maple sugar districts of Michigan indicate that the sugar producers are anticipating a better season than for two or three years. Last year the buds appeared so soon after the break in the weather that the period of sap flow was very short and unsatisfactory.

### Hancock County Beekeepers

The beekeepers of Hancock County, Illinois, the home County of the American Bee Journal, have at last organized a beekeepers' association, at Carthage, the county seat.

### Imperial Valley a Lettuce Producer

Imperial Valley, long known to the beekeeper as a producer of honey by the carloads, has added to its industries the commercial production of lettuce. Up to February 19, 1,871 cars of lettuce had been shipped from this county alone during the 1922 season.

### Fabre's Home to be Museum

Our attention has recently been called to the fact that the French Government recently purchased the home of the late Henri Fabre at Serignan to serve as an adjunct to the museum of natural history. Fabre wrote much concerning insects, including bees, and was the best known naturalist of the last generation. Mr. Fabre's daughter is to be retained as caretaker of the place.

### A New One

The Philadelphia Society for Prevention of Cruelty to Animals has a new problem. Someone has appealed to the society to determine whether robbing a bee tree is cruelty to animals within the meaning of the law. According to newspaper reports, it was finally decided that robbing the bees in summer, when they could make good the loss would not be a violation, while robbing them late in the season would result in the death of the colony.

### California Honey Week

The California beekeepers seem to be good advertisers. We have already mentioned the fact that they had enlisted the newspapers of that state in a publicity campaign to boost honey. The Governor issued a proclamation setting aside February 6 to 11 as California honey week. The papers have been generous with support of the scheme and have given large space to call public attention to the fact that California honey is the finest in the world and that California people should eat more of it. A large number of clippings from different papers have come to this office showing that much interest has been aroused.


# LOOK BEFORE YOU LEAP

Send in a list of your needs of BEE SUPPLIES for the coming season and get quotations on it.

1922 CATALOG, illustrated now ready.
MONDENG'S Bee Supplies speaks for itself

**CHAS. MONDENG**

**146 Newton Ave. N. and 159 Cedar Lake Rd. Minneapolis, Minn.**



# A BIG HONEY CROP

Have you learned the secret of a bumper honey crop?. If you will head your colonies with young, prolific queens your yields will surely be greater.

Buy your queens from L. L. Forehand. They have been on the market for over twenty years THEY ARE BRED FROM IMPORTED MOTHERS They cannot be beaten for honey gathering, gentleness, prolificness, disease-resisting, and non-swarming.

**GUARANTEE**

I guarantee every queen will reach you alive, to be in good condition; that she will be purely mated, and to give perfect satisfaction. I will return your money or replace queens that are not satisfactory in every way.

Safe delivery in U. S. and Canada only.

| | 1 | 6 | 12 | 100 |
|---|---|---|---|---|
| Untested | $1.50 | $7.50 | $13.50 | $1.00 each |
| Select untested | 1.75 | 9.00 | 16.50 | 1.25 each |
| Tested | 2.50 | 13.00 | 24.50 | 2.00 each |
| Select tested | 2.75 | 22.00 | 41.50 | 3.35 each |

Send for circular. It contains useful information.

**L. L. FOREHAND, Ft. Deposit, Ala.**



**Statement of the Ownership, Management, Circulation, Etc.,** required by the act of Congress of August 24, 1912, of **American Bee Journal,** published monthly at Hamilton, Illinois, for April, 1922:

STATE OF ILLINOIS, } ss.
COUNTY OF HANCOCK. }

Before me, a Notary Public, in and for the State and County aforesaid, personally appeared M. G. Dadant, who having been duly sworn according to law, deposes and says that he is the Business Manager of the American Bee Journal, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, rendered by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse side of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor and business manager are:

Publishers, American Bee Journal, Hamilton, Ill.

Editor, C. P. Dadant, Hamilton, Ill.

Managing Editor, Frank C. Pellett, Hamilton, Ill.

Business Manager, M. G. Dadant, Hamilton, Ill.

2. That the owners are:

C. P. Dadant, Hamilton, Ill.
H. C. Dadant, Hamilton, Ill.
V. M. Dadant, Hamilton, Ill.
L. C. Dadant, Hamilton, Ill.
M. G. Dadant, Hamilton, Ill.
Leon Saugier, Hamilton, Ill.
Jos. Saugier, Hamilton, Ill.

That the known bondholders, mortgagees and other security holders owning or holding 1 per cent of more of the total amount of bonds, mortgages or other securities, are: None.

(Signed) M. G. DADANT.

Sworn to and subscribed before me this 1st day of April, 1922.

MARY EARLS (formerly Mary McCoy),
Notary Public.

My commission expires January 17, 1924.

### WHY NOT A TRADE COIN?

By J. Skovbo

Mr. Bonney's idea (page 68) of a 2½-cent "bee coin," is a good one and deserves the support of all beekeepers. If Congress in its wisdom, however, should fail to adopt the design, would it not be a good plan for beekeepers who retail large quantities of honey to have trade coins made with this or similar designs, to be used in their business? If Mr. Bonney's design is used, the "Good for Five Cents in Trade" could be inscribed under the bee; on the reverse could be the beekeeper's name and address, and perhaps the emblem of the American Honey Producers' League. I am advised by a local pool hall owner that the brass trade coins used in their place cost him $18.75 per 1,000 for the 5-cent pieces. If orders in large quantities were placed by the League, they should be had for much less. These coins could be used in exchange for used containers, given away with jars of honey on "special sale days," or simply given away to anyone that it might induce to buy honey; even if some of them were not used for buying honey, but perhaps kept as curios, they would still be advertising the name of the issuer.

The "skep" is used as the seal for the State of Utah, and is used much as an ornamental design about public and private buildings. The name "Deseret" originally given by the Mormons to the present State of Utah, is said by them to be derived from the Book of Mormon, and to mean "honeybee." The apartment house-like residence where Brigham Young kept his "queens," is generally known as the "beehive" house; in fact it seems likely that Mr. Young may have been the original "King Bee."

Oregon.

### A QUEENLESS SWARM

By Bede Mayenberger

Last summer the writer of this had a peculiar experience with a swarm. On a nice warm morning in July, at about 8 o'clock, a large swarm of Italians left their hive, and without settling on any of the low trees in the apiary, flew away to the neighboring woods.

As all my queens are clipped, I went to the hive, looked for the queen crawling about in the grass, found and caged her, as usual, and patiently waited for the procession to return. Meanwhile I examined the colony, but without discovering any queen cells.

After waiting in vain for the return of the queenless bees, one of my neighbors, who had watched their flight, notified me that they were hanging on a tree about a mile from the apiary. So at about 12 o'clock, four hours after their departure, I placed an empty hive containing an old brood comb on the auto and drove out to the designated location, where I found them clustering on a branch 20 feet from the ground, with a few bees flying about in wide circles.

I placed the hive that I had brought along on the ground, and behold, it did not take two minutes before the scouts had discovered it, and in five minutes all the bees had left the tree and rushed into the hive.

Wondering what they would do, I left the hive there and returned home, expecting that when they would discover the absence of their queen, they would certainly leave and return to their old home. However, nothing of the kind happened, and when I came out again late in the evening, all the bees were in the hive and seemingly quite satisfied with the state of things. I now took them home and returned them to their old hive, where they remained without making new attempts to swarm.

I am sorry now for uniting them with the parent colony, as it would have been very interesting to see what the final outcome would have been, if the bees had been left to shift for themselves. I wonder whether any of our beekeepers have had similar experiences with queenless swarms.

Maybe the bees felt the new wind blowing from Europe, and started also to depose their queens and try the republican form of government, though with bees this would hardly be a success.

(Let us make another suggestion. It is possible that the bees had reared a young queen some weeks previously and that it was this queen which left the hive with the swarm, while the old queen was helplessly floundering in the grass. This case of two queens in one hive often happens at the time of swarming. Without a queen, the bees would hardly be satisfied to enter an empty hive and remain in it.—Editor.)

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### NUMBER AND WEIGHT OF EGGS

1. How many eggs is a queen capable of laying in 24 hours?

2. How much, approximately, does a queen weigh?

3. How many bee eggs does it require to weigh one grain?

California.

Answers.—1. We have often known queens to lay 3,000 to 4,000 eggs per 24 hours, at the time of active breeding. Doolittle mentioned some which, he said, laid 5,000 per day for weeks in succession.

2. I do not know, but have examined authorities: Collin, Girard, Cook, Cheshire, Nelson, Phillips. Most of them mention only the weight of worker bees. Cook and Cheshire give weights of eggs and queens, but they are so far apart that there must must be some errors. Cheshire (page 83) states that, in winter, a queen may not weigh more than 1 1-3 grains, while in the breeding season she may turn the scale at 3 grains. Professor Cook, like most scientists, uses the metric system (which we all ought to use for greater convenience). But his reckoning is surely wrong, for he gives the weight of the queen (Manual of the Apiary, page 86) at 2.3 grams, which would make 200 such queens weigh about a pound. But practically all authorities agree that a good queen may lay more than double her weight of eggs in 24 hours. There should be nothing astonishing about this, since she is not fed upon honey, but upon the highly digested food produced by the workers, and usually called "royal jelly," which must be assimilated very promptly, to develop the eggs.

3. Cheshire writes that, "by a careful calculation, 90,000 eggs weigh 20 grains." I will not vouch for any of the above statements, but I do not doubt the fact that the queen may lay considerably more than twice her weight of eggs in 24 hours.

The above answers having been refered to Prof. Wallace Park, who has experimented upon that subject, he gives the following reply, which shows errors in Cook's book, evidently typographical errors, which represent both queens and eggs as weighing ten times more than was really intended to state. The edition quoted by me is that of 1888, which was evidently corrected in the edition of 1910.—C. P. D.

#### Comments of Prof. Park

The first question is answered as well as it can be at present. In regard to the second, I have nothing new to add, as my weighings have been of workers only. I find, however, that Cook's Manual, Ed. 1910, p. 106, reads: .2299 gram for the weight of a queen. This is practically .23 gram instead of 2,3 grams and would require 2,000 queens to the pound. This corresponds fairly well with Cheshire's figures, since at 3 grains each, 2333 would weigh a pound. And if, as Cheshire suggests, the queen had recently taken food, she would weigh about 3½ grains, at which figure exactly 2,000 such queens would weigh a pound.

In answer to the third question, I find that Cook, in the same reference as above, says that 3,000 eggs weigh .3900 gram which gives 500 to the grain as against 333 to the grain according to Cheshire. Thus Cook's figure is 50 per cent greater than Cheshire's. Further investigation alone can determine whether either figure is significant.

Wallace Park.

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#### California Convention

The 35th annual convention of the California State Beekeepers' Association, February 8-9-10, at Visalia, was a success. On account of sickness and severe storms at that time, it was necessary to revise the program, but we were fortunate in having with us able speakers to take the place of the absent ones.

The election resulted in the following men being elected: Cary W. Hartman, President; Casper Hauser, Vice President; C. D. Stuart Secretary-Treasurer, and M. H. Mendleson, Second Vice President. The Executive Committee consists of J. A. Howard, Phil J. Strubel and R. L. Watkins.

### ANY HIVE A NON-ROBBING HIVE

By Amos Burhans

A certain editorial writer for one of the big dailies takes a dash through Emerson every now and then just to add a touch of style and lucidity to his work. He made the remark that when he wanted to write about any subject, he wanted to know what others had said about it and how they wrote about it.

While getting ready to make increase last spring I thought about that writer, so I got out my Dr. Miller, Doolittle, Cheshire, Dadant and others to see what they said about just such a task as I was about to attempt.

Among many things I got from them was a statement of Doolittle's that he had never had a nucleus robbed out that he had started on the opposite side of the hive from the contracted entrance. That sounded good, so I followed it. It worked. And while I was so interested in the subject of robbing and its prevention I looked up everything I could find along that line.

In this mass of information I found several mentions of non-robbing hives. The next thing was to get one. I wanted to know the principle of them. Why they were non-robbing hives, what one thing made them non-robbing, and all the other facts in connection with them attracted me. When I had digested all this information just one idea above all others stood out: That the basis of all non-robbing hives and ideas was the same; that like a great piece of music, the theme was adhered to throughout the argument. Now I may be wrong, but the tunnel entrance that led the bees to the rear of the brood chamber, before they gained entrance, appeared to me to be the basis of non-robbing hives.

And having a lot of work away from the bee yards during the summer made me want an absolutely non-robbing hive or idea. I found that to buy the non-robbing bottom boards advertised would about break a bank. So I set about to build them. But that was a job—a real job. Then I visited a planing mill and found they wanted as much per bottom board as the manufacturers. So I devised one that does the work, is a sure-fire non-robber, costs about 2 cents per hive and, like a part for a Ford, anyone may apply it. By all rules of self-preservation, I should put this on the market in the form of a system and sell it for five dollars. If anyone is having trouble with robbing, it is worth ten times this.

Go to any print shop where they make these paraffin placards or signs and have a few of them made. Have paraffined cards cut just the size of the bottom of the hive body, minus two or three inches in length. The cards must be the width of the outside dimensions of the hive body, no matter whether the hive is an 8-frame, a 10-frame, a modified Dadant or a Root square hive. The width must be right or the weight of the body will not hold it in place.

Lift up the front end of the hive body about an inch and slide the card board underneath it, allowing the sides of the card to rest on the sides or edges of the bottom board. Keep the front end of the card even with the front of the hive body. If you have had the card cut the right length it will be about two or three inches short of the rear of the hive body and bottom board. You can easily make a model, and the man who cuts them can follow it.

Bees alighting on the bottom board are forced to enter the brood chamber from the rear, traveling from the front of the bottom board to its rear before crawling upward. You can narrow down the entrance, as I did, on the nuclei, or you can leave it full width for a strong colony. As my nuclei are generally made on the east side of a south facing hive, I shut down the entrance to an inch in width on the west side.

To keep the card board from sagging at the front, where it has no support, a couple of small blocks just the depth of the sides of the bottom board that you are using can be put under the card. But the beauty of the thing is that it works. It does prevent robbing. It seems to give the weaker colony a chance to fight off any intruders. The robbers do not get a chance to dodge in and get up into the hive before they are discovered. Having used this on mating boxes, small hives and large hives makes me think it is worth passing on. Of course, I may be barking up the wrong tree; it may not be original. And as long as it saves the small colony and weak colony, at least in this locality, I feel justified in saying it is worth recording.

So I am wondering what Mr. Dadant or Mr. Pellett have to say about it. Maybe they can shoot it full of holes, but they cannot chute it out of my bee yards.

Iowa.

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### Big Essentials in Beekeeping

"Big Essentials in Successful Beekeeping," is the title of a 48-page booklet written by P. C. Chadwick, beekeeper and queen breeder of California. Mr. Chadwick, in his book, aims to take up concisely the main features to be observed in successful honey production.

Chapters included are, "Relation of the Queen to Success," The Value of Abundant Stores," "The Value of Protection." Though applicable to the country as a whole, Mr. Chadwick's direct appeal is to the California beekeeper.

One statement made is to the effect that a mailed queen is as easily introduced as one fresh from a hive in the same apiary. It is generally believed that the latter would be more easily introduced.—M. G. D.

---

### Busy Bears

J. J. Wilder reports that bears have destroyed a large number of colonies of his bees recently. As a result he has organized a bear hunt, and 25 or 30 of the animals have been killed.


## QUEENS

**Our Old Reliable Three-banded Italians are Honey Getters.** They are gentle, prolific and very resistant to foulbrood. Orders booked for one-fourth cash. Safe arrival guaranteed. Circular free. Prices April 1 to July 1:

Untested, $1.25; over 25, $1 each.
Sel. Unt., $1.50; over 25, $1.25 each.
Tested, $2.50; over 25, $2.25 each.
Select tested, $3 each.

See our ad in January Journal.

**JOHN G. MILLER**
**723 C St., Corpus Christi, Texas.**

**QUINN'S QUEENS OF QUALITY**

Have no superior. "There's a reason." Are Mendelian bred, good qualities accentuated. Gray Caucasions, gray Carniolans, most gentle of all, prolific, hardy, vigorous, disease-resisting, white comb builders—they deliver the goods.

**CHAS. W. QUINN,**
**Powhatan, Va.**

## 3 BAND QUEENS

**That have Reached the Peak of Perfection**

Why not make every colony 100 per cent efficient by heading them with our vigorous queens. You will be surprised at their gentleness and honey-gathering ability. Quality considered, prices are extremely low. For complete price list send for circular.

Untested, $1.25; $13.50 doz.; 25, $1 each.

Select untested, $1.50; $16.20 doz.; 25, $1.25 each.

Every queen we sell fully guaranteed. Our capacity is only a thousand of these GOOD Queens a month. To get yours when you want them, better send in your order to be booked. No deposit required.

**HERMAN McCONNELL**
**Robinson, Illinois**

## Special on Sections

**A-Grade Polished Sections**

| | |
|---|---|
| 4¼x4¼x1⅞, two beeway, per 1000 | $11.95 |
| 4¼x4¼x1½, plain, no beeway, per 1000 | 11.95 |
| 4x5x1⅜, plain, no beeway, per 1000 | 11.95 |
| Slotted section holders, per 100 | 4.00 |
| Slotted wood separators, per 100 | 1.60 |

Order now and save money.

**SANCO BEE COMPANY,**
**E. Main St., Fredericksburg, Ohio.**

## QUEENS! QUEENS!

Large leather-colored, three-banded Italian queens; 10-year selection, bred from honey-gathering; gentle, hardy and long-lived. Price, select untested, 1, $1.25; 6, $6.50; 12, $12. After July 1: 1, $1; 6, $5. Tested $1.50 each. Write for price on large orders. Free booklet "How to transfer, Get Honey and Increase."

**J M. GINGERICH, Kalona, Iowa.**

## THE FAMOUS TEXAS QUEENS

The FAMOUS TEXAS QUEENS can now be had again at prices that are in the bounds of reason. No need of you paying high prices.

My Texas Queens are well known over the world.

Untested queens $1 each, $11 dozen.
Tested queens $1.25 each, $14 dozen.

**GRANT ANDERSON, Waco, Tex.**
Route 2.

**A NEW BEE BOOK**
**"Dadant's System of Beekeeping"**
Send for a copy today.
**Price $1.00.**

## New Jersey Queens

These queens are equal to those produced anywhere, and are the daughters of a breeding queen bought in 1921 of one of the oldest breeders of queens in the United States.

This queen was thoroughly tried out last season and her daughters are found to be

**HUSTLERS, GENTLE, PROLIFIC**

**MATED THREE-BAND**

**QUEENS**

1 untested ..... $1.25
6 untested ..... $7.00
12 untested ..... $13.00
Breeding Queens .. $10.00
Circular on request.

**Lewis "Beeware" and Dadant's Unexcelled Foundation.**

**J. F. GARRETSON**
**Bound Brook, N. J.**

## CARNIOLANS

build up very rapidly during the spring. They will rear brood under adverse conditions more steadily than any other bees, if there are plenty of stores in the hives and they are well protected. Ask for my free paper describing their merits more fully, prices of queens, etc.

*Are your bees building up satisfactorily?*

**A. G. HANN, Glen Gardner, N. J.**


### Iowa Beekeeper Dead

We have just received notice of the death of Mr. William Benton, of Maquoketa, on March 4, 1922. Mr. Benton had been for years a comb-honey specialist, and together with his brother-in-law, Mr. Frank Coverdale, had shipped in the neighborhood of a carload of honey almost every year out of Maquoketa.

He began beekeeping when a very young man and continued to within two years of his death. We understand that Mr. A. E. Banks, of Delmar, who is a nephew of the dedeceased, has taken over Mr. Benton's bees.

### Beemen Back Club Members

Local beekeepers in Benton, Grays Harbor, Pierce, Spokane, Walla Walla and Thurston Counties, Washington, have agreed to loan one or more complete hives of bees to interested boys and girls in their counties, for the purpose of organizing bee clubs.

These colonies of bees will be loaned to the club members on a two-year agreement. The beekeepers will loan each member one or more hives complete with a disease-free colony, the beekeeper to stand the loss without remuneration if the colonies die of disease during the first year.

The bee clubs will be organized to interest boys and girls in keeping bees; teaching better bee management; demonstrate cost of producing honey, preparing honey for market and assist in developing pure bred bees in the state.

B. A. Slocum, bee specialist of the Extension Service of the State College of Washington, has made the arrangements for the starting of the boys' and girls' clubs in the six counties. Beekeepers who are backing the clubs include: Miss Vina Trainer and A. H. Maxfield, of Touchet; C. M. Christensen, College Place; W. H. Phillips, Waitsburg; G. W. Webber, Walla Walla; W. L. Cox, Elma, and Mr. Terrill, of Kennewick.

The club members will divide half the surplus of honey and wax and half of the increase of bees at the end of each year, and at the end of the two years, return a complete hive with disease-free colony to the beekeepers.

### What One County Does

The following, taken from the Towanda Daily, published in Towanda, Pa., under date of January 20, 1922, will give an idea of the bee industry in Bradford County, Pa.:

"Bradford County leads the other counties of Pennsylvania in the production of honey. There were 6,729 hives in the county last year and an average price was $6.50. This makes the entire yield in the county $42,738.50. So, beekeeping in Bradford County is quite an enterprise.

"'Ten years ago beekeeping was a thriving industry throughout the state, but the spread of foulbrood wiped out thousands of hives. With the improved methods for fighting bee diseases, the industry has once more become profitable, with the result that thousands of new hives are being placed in the state annually.

"Last year there were 1,508,505 pounds of honey produced in Pennsylvania and the average price received by the beekeepers was 25c per pound, making the total value of the state's honey $377,708.53."

Phil Browning.

### More Patents

A recent issue of a German bee publication announces 16 patents recently issued. Ten of these are for new beehives, two for swarming devices, two for feeders, and the remaining two for apparatus. Verily the end is not yet, especially of the beehive, impossible of utilization except upon the patent paper on which it is written.

### Bulk Honey

In putting up bulk comb honey in Mason jars, I cut the honey from the frame with a number 30 wire, which is much better than a knife. With a sharp knife dipped in hot water I cut the comb honey into strips about 2 inches wide. These are placed on end in the jar and the remaining space filled with extracted honey which has been heated. In putting up five and 10 pound pails I cut the honey in squares and fill the buckets as full as I can and then pour in extracted honey to get the required weight. All packages are labeled "Campbell's Mountain Comb Honey." I sell by wholesale to the trade, and when selling from house to house charge the same price as the grocer sells for. By protecting the dealer every store in town handles Campbell's honey.

S. M. Campbell.

Arizona.

### The Bee World

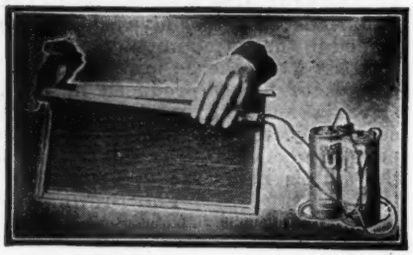
We have recently been authorized by the editors of the "Bee World" to accept subscription to their magazine at a yearly rate of $2.50. We will be pleased to handle such subscriptions without profit, for our readers. The "Bee World" is an international publication which should be of interest to every student of beekeeping.

### El Paso County, Colorado, Organizes

Herbert E. Webb was elected Secretary and D. S. Story, President, of the El Paso County Beekeepers' Association recently organized at Colorado Springs, Colo.

The commissioners of the county immediately appropriated $150 to help carry on better beekeeping in the county, and a like sum is being asked of the Chamber of Commerce of the city of Colorado Springs.

Beekeepers, as a class, have been too prone to wait till help comes to us rather than go after it. Concerted effort undoubtedly would be the means of getting many such provisions for county associations, as well as having an influence on State action.



## ELECTRIC IMBEDDER

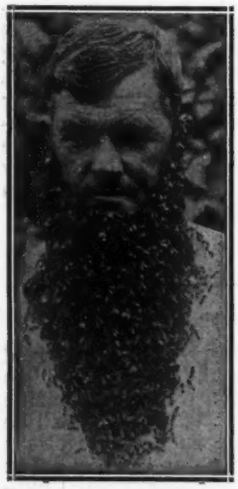
**Price without Batteries, $1.00**
Not Postpaid.
Weight 1 lb.

Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.

**Dadant & Sons,** Manufacturers HAMILTON, ILL.

## QUEENS

Write for our catalog of high-grade Italian Queens. Pure mating and safe arrival guaranteed.



**Price List**

Before Aug. 1.
1 to 4, inclusive.. $2.50 each
5 to 9, inclusive.. $2.45 each
10 or more ..... $2.40 each

After **Aug. 1:**
1 to 4, inclusive.. $2.00 each
5 to 9, inclusive.. $1.95 each
10 or more ..... $1.90 each
Breeding queen, whole season, $10.00 each

**JAY SMITH, Route 3**
**VINCENNES, IND.**

**GOLDEN QUEENS—1922**

Untested, $1.25 each, or $12 per dozen. Tested queen, $2. One 2-lb. package with untested queen, delivered, $6.50. One 2-frame nuclei, with untested queen, delivered, $6.50. Satisfaction guaranteed and shipments after April 15.

**R. O. COX, Box 25, Rutledge, Ala.**

## WESTERN BEEKEEPERS!

We handle the finest line of bee supplies. Send for our 1922 price list. Our quotations will interest you.

**The Colorado Honey Producers' Association, 1424 Market St., Denver, Colo.**

**AMERICAN FUR BREEDER** Monthly Magazine. Tells about breeding Foxes, Mink, Skunk and other fur animals. $1 a year. Sample copy 10c. American Fur Breeder. Box 217, Eminence, N. Y.

**CLOVERLAND,** Upper Peninsula of Michigan, has thousands of acres of clover-laden, low-priced lands waiting for bee farmers. Experts agree there is no region as favorably adapted to bee farming. Alsike, June, red-top and other clovers grow abundantly as volunteer crop. For detailed information write: **The Upper Peninsula Development Bureau, Marquette, Michigan.**

**BENNETT'S 3-BAND ITALIAN QUEENS**

The busy kind, gentle, prolific and disease-resisting.
Untested, 1, $1.50; 12, $1.25 ea., 25 or more, $1 ea.
Tested, 1, $2.25; 12 or more, $2 ea.
Satisfaction guaranteed. Health certificate with each shipment. Can ship by the 15th of April if weather conditions are favorable.

**W. A. BENNETT APIARIES,**
**Box 216, Hattiesburg, Mississippi**

**Let us tell you about the California Gold Medal Queens, The Queens with the Pedigree.**

Our hardy, immune, prolific strain of 3-banded leather colored Italians. Developed from the world's best strains by careful selection and tested under California conditions for five years, with excellent results. My specialty will be breeding stock and every queen produced will receive my personal care and inspection. Now receiving orders for the season of 1922, which will be filled in the order of their receipt. Write for catalog and prices.

**THE COLEMAN APIARIES,**
Geo. A. Coleman, Prop.,
2649 Russell, St., Berkeley, Calif.

## Hardy Italian Queens

Untested queens during May and June at $1.50 each; after July 1, $1 each, and prices on large orders. We guarantee safe arrival of all queens.

**O. E. TIMM, Prop.**
**Bennington, Nebraska.**


### Carpet Grass

In the American Bee Journal for January I note a statement in regard to carpet grass for Florida. It is said that it is presumed that the carpet grass referred to is the same as the carpet grass of California (**Lippia repens**), which is a native of Chile. I am most certain that the carpet grass referred to is the same that we recommend here for pastures on our coastal plain soil, namely **Paspalum compressum.** This is a slender, erect or creeping perennial 6 to 24 inches high; the creeping branches root at the joints and send up numerous leafy flower-bearing branches. The head consists of two to six slender subdigitate spikes each two to four inches long; plant produces seed freely; growing season is April to October. Carpet grass is common on low ground and moist pastures on the coastal plain from Virginia to Texas.

R. B. Willson.

Mississippi.

### Franklin County, Ohio, Instructs

Franklin County, Ohio, in which is situated Columbus, the State Capital, has a live lot of beekeepers. They recently devoted an evening meeting to a discussion and lectures on "Uses of Honey in the Home."

The meeting was held in the Public Library auditorium, and a circular letter was issued to the housewives of Columbus inviting them to attend. Displays of honey and honey-producing equipment were included.

Prof. Jas. S. Hine, of the University, is President of the society.

### Phillips at Philadelphia

Dr. E. F. Phillips gave the Ludwick lecture at the Philadelphia Academy of Natural Sciences on April 3. His subject was "Bees and Beekeeping."

### Rea was Busy in New York

The thirty-fourth annual report of the Dean and Director of the New York State College of Agriculture, which covers the year 1921, has the following to say of our good friend, Geo. H. Rea, who was in charge of extension work in beekeeping there before he went to Pennsylvania.

"The services of the specialist in beekeeping were in greater demand than ever before. He spent 162 days in the field, working 33 counties, conducted 53 demonstrations with an attendance of 835, gave 65 lectures with an attendance of 2,651, attended 36 conventions with an attendance of 1,618, and made 66 farm visits. In the course of the year he made 5,170 contracts, and wrote one magazine article, 5 circular letters with a circulation of 1,000, and 870 personal letters."

### California Conditions

We are now having another big rain storm and it looks encouraging to us. In 1884 we had a similar wet winter. It continued until late into the spring, and foggy and cloudy weather prevented us from working with the bees, and the bees had just enough stimulating flights to keep them breeding up and it was unusually late in June before we could do much extracting, and continued until late into July, on the sages.

Many tons of sugar are being fed in southern California. This is caused by extracting too closely at the close of the previous season's honey flow. This is a mistaken idea, for if the bees were left rich in stores, when these wet and cloudy cool spells come there would be no check in brood rearing, and this would result in an immense working force.

M. H. Mendleson.

### AN OLD SUBSCRIBER DIES

Mr. J. I. Clark, of Vergennes, Vt., died on January 28.

He had been a subscriber to the American Bee Journal for fifty-three years, and during all that time had been a thorough beekeeper. His bee business has been turned over to his grandson, Edwin S. Clark, who will continue the business and, of course, will continue the long-time subscription.

### Apis Club Honors Americans

At a recent general meeting of the Apis Club of England, four Americans were honored by election as honorary vice presidents: Dr. E. F. Phillips, E. R. Root, C. P. Dadant and Frank C. Pellett.

Three Americans were elected as fellows of the club: Dr. E. F. Phillips, George S. Demuth and Dr. G. F. White.

Dr. John Rennie, of the University of Scotland, who with the assistance of his staff, discovered the mite which is the apparent cause of the Isle of Wight disease, was elected as honorary president of the club.

### Dr. Miller's Typewriter For Sale

Mrs. Miller has just written us that she desires to dispose of a typewriter that Dr. Miller purchased and had used for a few weeks before his death. The typewriter is a Hammond machine and cost $100. It is a standard machine. The price is $50. Interested parties should write direct to Mrs. C. C. Miller, Marengo, Illinois.

### Death's Head Moth

Mr. Robert B. Manley writes us from Europe that the death's head moth caterpillar mentioned on page 105 of our March number, feeds also upon jasmine leaves and even upon the deadly nightshade.

### A Texas Association

The Dallas County, Texas, Beekeepers' Association, at its April 1st meeting, elected its officers and Meeting Committee. John R. Hancock is President again, and the Committee is to arrange a number of social meetings, picnics and honey spreads during the summer. The association went on record as willing to co-operate with the Texas A. & M. College in devising better ways of keeping bees and procuring better laws for the protection of the beekeeper.

### Beehives and Ammunition Cases

Recent press dispatches state that beehives have been exempted from custom duty when coming into Palestine in order to develop the beekeeping industry. A large consignment of hives was recently found filled with automatic pistols and ammunition. The discovery aroused much bitter feeling and served to revive the animosity between the Arabs and the Jews.

**BEEKEEPERS** WE MANUFACTURE DOVETAILED HIVES, HOFFMAN FRAMES, SECTIONS AND SHIPPING CASES

Our hives are made of best grade White Pine, cut accurate and smooth to standard measure. Sections are made of Basswood polished on both sides. There are no better made.

We carry a complete line of everything used in the apiary. Our shipping facilities are as good as can be found anywhere. We want your business. We guarantee prompt and satisfactory service. Price list free.

**MARSHFIELD MANUFACTURING COMPANY, Marshfield, Wis.**

**PACKAGE BEES FOR 1922**

**We Specialize on Three-band Italians Bred for Business.**

A 2-pound package of our hustlers with a select untested queen for $5; 25 or more, $4.75 each. Special prices on large lots. One-fifth cash books your order. Order early and make sure of shipping date. We do not accept more orders than we can fill promptly.

**CANEY VALLEY APIARIES, Bay City, Texas**

**J. D. YANCEY, Mgr.**

**PRICES OF QUEENS**

| | Nov. 1 to July 1 | | | July 1 to Nov. 1 | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $2.00 | $ 9.00 | $17.00 | $1.50 | $ 8.00 | $14.50 |
| Select Untested | 2.25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 |
| Tested | 3.00 | 16.50 | 30.00 | 2.50 | 12.00 | 22.00 |
| Select Tested | 3.50 | 19.50 | 36.00 | 3.00 | 16.50 | 30.00 |

**BREEDERS $12.50 TO $25.00**

Queens for export will be carefully packed in long distance cages, but safe delivery is not guaranteed

NO NUCLEI, FULL COLONIES OR POUND PACKAGES

**BEN G. DAVIS, Spring Hill, Tenn.**

**TYPEWRITER SENSATION**

**$4 or $5 a month WILL BUY**

A Standard, Guaranteed TYPEWRITER With Every Modern Writing Convenience

*Write Today For Illustrated Circular Explaining Try-Before-You-Buy Plan*

SMITH TYPEWRITER SALES CO

(Harry A. Smith) 314–218 No. Wells St., Chicago, Ill.

Will have Golden Italian Queens for delivery after May 25, untested $1.50 each; 12, $14.50; tested, $3; after July 15 untested $1.25.

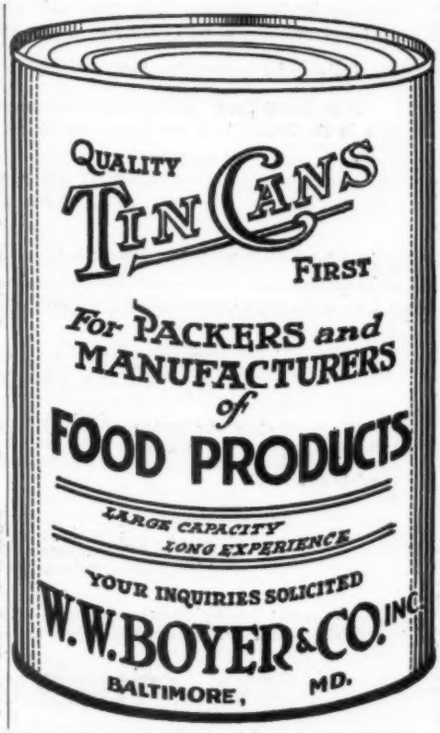
**T. J. TALBOTT & BRO.**

409 Marx St., South Richmond, Va.

**THE BOOK YOU SHOULD BUY**

C. P. Dadant has recently revised and rewritten Langstroth's classic book on the Honeybee. The book now contains the best from three widely known writers on beekeeping, Langstroth, Charles Dadant and C. P. Dadant. The new edition has 448 large size pages and sells for $2.50.

**American Bee Journal, Hamilton, Ill.**



## SCOTT QUEENS ARE GOOD QUEENS

MY QUEENS ARE GETTING RESULTS

among my hundreds of honey-producing colonies and for my customers. One writes: "Dear Mr. Scott: please book my order for one-half dozen queens. Those I received from you last season have made 150 lbs. comb honey so far this season. Yours truly." (Name on request.)

UNTESTED GOLDEN OR THREE-BANDED QUEENS

June 1 to July 15, one, $1.50; six, $8.00; dozen, $15.00
Pure mating, safe arrival and satisfaction. No disease. Card brings circular.

**ROSS B. SCOTT, LAGRANGE, IND.**

## SUPERIOR FOUNDATION

**"BEST BY TEST"**

Do not fail to secure our 1922 reduced prices on SUPERIOR FOUNDATION. State quantity desired. We also manufacture Hoffman frames, dovetailed beehives, etc. Quality unexcelled. Prices on request.

**SUPERIOR HONEY CO., Ogden, Utah**

**(Manufacturers of Weed Process Foundation).**

## BEES-QUEENS

**FROM GEORGIA**

Queens—Untested $1.00; Tested, $1.50. Bees—1 lb. $2; 2 lb. $4; 3 lb. $6. Nuclei—1 fr. $3; 2 fr. $4; 3 fr. $6

Discounts on quantity orders. Your satisfaction guaranteed. Send us a list of your supply needs

Disease-resisting. State inspection just made certifies our yards free from disease.

THREE-BANDED ITALIANS

**MICHIGAN HONEY PRODUCERS EXCHANGE, Inc.**

**5495 Grand River Ave., Detroit, Mich.**

Our buyers who have received their first shipments have come back with orders for more of the same.

## Notice to Beekeepers

I am offering to the trade 3-frame nuclei with a select untested queen at $5.50 each. These nuclei consist of Hoffman frames, new combs wired on full sheets of foundation. Bees are of the best strain of Italians; no black or hybrid bees to offer. Lots of 20 or more, write for prices. I guarantee safe arrival and furnish a health certificate with all shipments. After May 28 I offer these same nuclei at $4.75 each, and after June 25 at $4.00 each; from June 25 and on at $3.50 each.

I also offer queens for June delivery at $10 per dozen, or $1.00 each; large lots, write for prices

Also I will have for sale 500 to 600 colonies of bees, all in the very best of hives; will sell with or without location, which is the best in the South, both for honey, queen rearing and the package trade. If you are interested, write for prices, as they must be sold.

**A. B. MARCHANT, Jesup, Ga.**

## PACKAGES, NUCLEI AND QUEENS

We must close our package season May 20. After June 1 will ship nuclei and queens from Columbia, Ala. We have one special 100 packages hybrid bees, with select untested 3-band queen, at $4.75 each. Better wire acceptance. There are no better queens than our bright 3-band queens. Nearly 80 per cent of our 1921 customers are ordering for 1922. Our apiaries were inspected in March; furnish clean bill.

Good WEIGHT. PRICE LIST FOR MAY. STRONG NUCLEI.

1-lb. package with select untested queen, $3.00. 1-frame nuclei complete, $3.00.
2-lb. package with select untested queen, $4.00. 2-frame nuclei complete, $4.25.
3-lb. package with select untested queen, $5.00. 3-frame nuclei complete, $5.50.

Select untested queens, $1.25; 6 or more, $1.00 each; 20 per cent discount after June 1; tested queen, $2.50; breeders in 1-f. nuclei, $8. Write us for prices on white tupelo honey. Satisfaction, safe arrival guaranteed. Address our Apalachicola, Fla., office.

**TUPELO HONEY CO., Columbia, Ala.**

## Famous Three-Banded and Golden Italian Queens For Sale

We can fill orders for 1 queen or for 1,000. Orders not too small or too large. We have 15 bee yards scattered around in Alamance, Randolph and Guilford Counties to test our strain of bees in the different parts of the counties, to select our queens, and we find we have selected and tested out as fine a strain of bees as can be started, for we buy lots of queens from the A. I. Root Co., and we find our bees are as good as we can find from any breeders; in short, they get the honey, fill the supers quickly, and that is what breeders and honey producers want. They winter well in Canada and over the United States; also are fine resisters of foulbrood disease. We never have any brood diseases here, but our customers say they are fine for foulbrood in New York and other northern states, where they have it so bad.

Untested Queens—1, $2; 3, $5; 6, $8; 12, $14; 25, $27; 50, $50.

References: Bank of Liberty, Liberty, N. C.; The American Bee Journal.

**H. B. MURRAY, LIBERTY, N. C.**

**QUEENS**
**THREE-BAND ITALIANS**

## PACKAGE BEES

**QUEENS**
**SILVER GRAY CARNIOLANS**

Western headquarters for PACKAGE BEES and QUEENS. Orders booked with 25 per cent deposit, balance just before shipping. Deliveries start April 1. Safe arrival guaranteed of bees within 5 days of shipping point, queens anywhere in U. S. A. or Canada. Free circular for the asking.

| | | | | | |
|---|---|---|---|---|---|
| 1-pound package | $2.00 ea. | 10 or more $1.75 ea. | 1 untested queen | 1.25 ea. | 10 or more 1.20 ea. |
| 2-pound package | 3.50 ea. | 10 or more 3.00 ea. | 1 select untested | 1.50 ea. | 10 or more 1.40 ea. |
| 3-pound package | 5.00 ea. | 10 or more 4.50 ea. | 1 tested | 2.00 ea. | 10 or more 1.80 ea. |
| 1 select tested | 2.25 ea. | 10 or more 2.00 ea. | | | |

References by permission: First National Bank of San Jose; Security State Bank, San Jose
American Bee Journal, Hamilton, Ill.; Western Honey Bee, Los Angeles.

Write for prices in large lots. Breeders, extra selected and tested for breeding, $5.00

**J. E. WING** **155 Schiele Ave.** **SAN JOSE, CALIF.**

## NUCLEI FOR SALE—1922 PRICES

Remember that in buying our nuclei you are not only getting two pounds of bees, but three frames of brood, which, when hatched, will double the size of the colony.

Note what these large beekeepers say: "I have no hesitation in recommending you as to your ability to put up bees for shipment, or as to your business integrity. Of the 225 nuclei sent to date, every one came through alive and in fine condition."—R. F. Holtermann, Ontario, Canada.

"Nuclei arrived in fine shape; made 100 lbs. clover honey each. Book me for 100 next spring."—G. F. Saunders, Hornby, Ontario, Canada.

H. J. Eisaman, of East Springfield, Pa., states: "While visiting in Mr. R. F. Holtermann's part of the country this fall, I noted the splendid showing your bees had made. Book me for 30 nuclei for May 1."

PRICE LIST OF OUR GOODS

3-frame nuclei Italian bees with Italian queen ..... $5.50 each
3-frame nuclei hybrid bees, with guaranteed pure Ital. queen, $5 each
3-frame nuclei black bees, with black queen ..... $4.00 each
4-frame nuclei blac bees (without queens), fine for building up weak colonies ..... $4.00 each
Cypress hives, complete, crate of 5 ..... $12.00
Medium brood foundation at 65c per pound.

Terms: One-fourth down to guarantee acceptance. Safe arrival and satisfaction guaranteed. Certificate of inspection will accompany each shipment. Will start shipping April 10, 1922.

**A. R. IRISH, Ludowici, Ga.**

## THREE BANDED ITALIAN QUEENS AND BEES

Raised in full colonies, mated in three-frame nuclei, which insures strong, vigorous queens bred especially for honey production, hardiness and gentleness. Tested in our own apiaries in Idaho and Montana.

For quantities or car load shipments write for prices. All standard Langstroth equipment.

| Nuclei, with laying queen— | April | May | June |
|---|---|---|---|
| 1 frame | $4.00 | $3.50 | $3.00 |
| 2 frame | 5.50 | 5.00 | 4.50 |
| 3 frame | 7.00 | 6.50 | 6.00 |
| 4 frame | 8.50 | 8.00 | 7.50 |

1-lb. packages of bees, without queen ..... $2.50
2-lb. packages of bees without queen ..... 4.00
3-lb. packages of bees, without queen ..... 5.75
Add $1.50 each if queen is wanted.

20 per cent with order, balance time of shipment. Our guarantee: Safe arrival, satisfaction, no disease

**WEBER BROS. HONEY CO., Rialto, Cal.**

# Our Big Special for May Delivery

1000 FULL COLONIES

Transportation prepaid on everything we ship.

We have the bees and queens, and they must move.

1000 NUCLEI

PRICES OF PACKAGES WITH YOUNG QUEENS:

1-lb. packages, $3.00 each; 6 to 12, $2.75 each; 12 and up, $2.50 each
2-lb. packages, $5.00 each; 6 to 12, $4.75 each; 12 and up, $4.50 each
3-lb. packages, $6.00 each; 6 to 12, $5.75 each; 12 and up, $5.50 each
Select untested queens, 75c each. Select tested queens, $1.50 each
Remember, we pay all mail or express charges.

Our bees are wonderful honey gatherers, gentle and very resistant to all diseases. We guarantee every package or queen we ship to give full satisfaction. Wings of queens we clip free of charge when so desired. Safe arrival and prompt delivery are also fully guaranteed. There may be other bees just as good, but we believe there are few better. To know them, try them.

**HAYNEVILLE APIARY COMPANY, Hayneville, Alabama**

# Our Special May Offer on Packages—Transportation Paid

Twenty-six years of select breeding gives us a strain of bright three-banded Italian bees that are unsurpassed for their disease-resisting and honey-gathering qualities. Delivery May 10 to June 1. All packages with young select queens.

1-lb. packages, $3.50 each; 6, $3.25 each; 12 or more, $3.00 each.
2-lb. packages, $5.00 each; 6, $4.75 each; 12 or more, $4.50 each.
3-lb. packages, $6.25 each; 6, $6.00 each; 12 or more, $5.75 each.
Untested select queens, $1.25 each. Tested select, $2.50 each.

We guarantee our bees to give absolute satisfaction and to arrive in perfect condition. Our strain has pleased thousands of others. Give them a chance to please you. They know how. Our little booklet free for the asking. It tells all about our bees and how to handle them for best results.

**M. C. BERRY & CO., Montgomery, Alabama Box 697 U. S. A.**

FORMERLY HAYNEVILLE, ALA.

# Annual Sweet Clover Seed for Sale at Low Prices

NOW IS THE TIME TO PLANT

Fifteen years ago M. C. Berry discovered this wonderful plant growing on the "Old Gilmer Plantation," near Tyson, Ala. Since that time we have watched with interest its great spread and growth throughout Alabama. As a plow-under green manure crop it has no equal, and for honey we find it wonderful. In gathering this seed we had a lot that through a misunderstanding were mixed with biennial; therefore, our loss your gain, as we are selling hulled and scarified seed at the following unheard of low prices:
Prices as follows, transportation prepaid:
5 to 10 pounds, 25c a pound; 25 up to 50 pounds, 20c a pound; 50 to 100 pounds, 17½c a pound; 100 pounds and up, 15c a pound.

Seeds are guaranteed to be pure sweet clover running from 50 to 90 per cent pure annual and the balance biennial. Germination we guarantee to please.

**M. C. BERRY & CO., Box 697 Montgomery, Ala., U. S. A.**

# QUEENS-PACKAGE BEES

My apiaries consist of 550 colonies of bees. I have the best stock I have been able to obtain, having purchased queens from Moore, Shaw and other breeders of note. There has never been any foulbrood in this section of the State.

| QUEENS | | PACKAGE BEES | | NUCLEI | |
|---|---|---|---|---|---|
| One untested | $1.00 | 1-pound (no queen) | $2.00 | 1-frame | $3.00 |
| One tested | $1.50 | 2-pound (no queen) | $4.00 | 2-frame | $4.00 |
| | | 3-pound (no queen) | $6.00 | | |

Add price of queen to above prices of packages and nuclei.

Five per cent discount on orders of $50 or more; ten per cent discount on orders for $100 or more.

PROMPT SHIPMENTS AND SAFE ARRIVAL GUARANTEED

Gallberry honey flow will be over in my locality by May 25. Write for special prices on package bees and nuclei for shipment June 1.

**N. L. STAPLETON, COLQUITT, GEORGIA**

## Nordans Three-Banded Italian Queens and Bees

Three Banded Only

Bred strictly for quality. My first original stock was procured from the highest quality obtainable in the U. S. A., which I have always proved to the highest point, I now, after years of select breeding from 500 vigorous colonies have a strain that is not surpassed by any strain that is bred strictly for honey gathering, a strain that is immune to bee paralysis. I have found the foundation of bee paralysis is in the queen. They are very resistant to foulbrood.

All queens raised in standard nuclei. I positively guarantee my queens each and every one to give absolute satisfaction or your money cheerfully refunded. Purchaser is the sole judge. You can not lose. Always a fair deal. I am not a new man; have been in business almost all my life for honey production and improving my strain, sparing neither labor nor money. My honey crop is always insured. If "the season is favorable, I don't fail to get the crop." Why? Because I have bred my strain to a standard that is not surpassed by any. My experience is from boyhood, until now I am 55 years old, makes 36 years among the bees. I have no orders on file and can make shipment next day after order is received, weather permitting. I appreciate your business, large or small. Prompt attention given to all, and absolute satisfaction. All queens select. If they do not prove pleasing to the eye they are not shipped. Can make immediate shipment of packages.

PRICES ON QUEENS

1, $1.25; 10 or more, $1.15; 25 or more, $1.00 each.

PACKAGES

2-lb. packages, $3.75 each; 25 or more, $3.50 each; 50 or more, $3.35 each. Add price of queens.
Reference, Alabama Bank and Trust Co., Montgomery, Ala.
Satsifaction my motto.

**M. S. NORDAN, Mathews, Alabama**

## 3000 Young Vigorous Italian Queens for May-June Delivery

# MR. BEEKEEPER

HIGHEST QUALITY. PROMPT SERVICE.

I will have 3,000 vigorous Italian queens gor sale in May and June. During my 15 years' experience with bees I have bought some ot the finest breeding queens that could be obtained and have improved them to the highest point. I now have a strain of bees that I positively GUARANTEE THAT CANNOT BE EXCELLED, at the right price. If you do not believe what I say about these queens, give me a trial order and order the same amount from any breeder you may wish, and see for yourself. WHY PAY $2 or $3 for your queens when you can get the same strain of bees at a much lower price? These queens are reared with the greatest care that can be given to queen rearing, and I positively guarantee that you cannot buy any better. A limited number extra fine selected, tested queens that would make fine breeding queens, at $4 each. Safe delivery and entire satisfaction guaranteed.

MY PRICES

| | 1 | 6 | 12 | 100 |
|---|---|---|---|---|
| Untested | $1.25 | $6.50 | $12.00 | $85.00 |
| Select untested | 1.50 | 7.00 | 13.00 | 90.00 |
| Tested | 2.50 | | | |
| Select tested | 3.00 | | | |

POUND PACKAGES, WITH SELECTED UNTESTED QUEENS

Shipment made by return express.

1-lb. packages.....1 to 12, $3.75 each; 12 or more, $3.50 each
2-lb. packages.....1 to 12, $5.00 each; 12 or more, $4.75 each

**THE FARMER APIARIES, Ramer, Alabama**

## QUEENS FOREHAND'S THREE BANDS BEES

### One Queen for $1. They Satisfy. Why?

Because they are guaranteed to be as good as money can buy. Not a cheap queen, but a first-class queen at a cheap price. Every queen guaranteed to reach destination in first-class condition, to be purely mated and give perfect satisfaction, or money back. Orders filled by return mail.

Untested, 1 to 25, $1.00 each; 25 to 50, 90c each; 50 to 100, 80c each.
Select Untested, 1 to 25, $1.25 each. Tested, $2.00 each, 12 for $20.00.
One pound bees with queen, $3.00; 2 pounds bees with queen, $5.50.

**N. FOREHAND, Ramer, Alabama**

# SUPERIOR ITALIAN BEES AND QUEENS

While I have been returning orders for some time, if we have reasonably good weather we can still supply another thousand packages of bees. We never feel safe in booking for more than three-fourths of our capacity, then if we have some bad weather we do not get behind with deliveries.

**Package Bees and Nuclei, with Queen**

1-lb. package, $3.50; 10 or more, $3.00 2-lb. package, $5.00; 10 or more, $4.35
3-lb. package, $6.50; 10 or more $5.85
Same price on 1, 2 and 3-frame nuclei, respectively.
Untested queens, to June 15, 1, $1.25; 10 or more $1.00 each
Tested queens, to June 15, 1, $2.00; 10 or more $1.75 each.
Untested queens, after June 15, 1, $1.00; 10 or more, 75c each.
Tested queens, after June 15, 1, $1.75; 10 or more, $1.50 each
Special offer on 3-frame nuclei in lots of 25 or more.
**Cypress Bee Supplies. Send for Catalog. Write for Prices on Large Lots.**

**THE STOVER APIARIES, MAYHEW, MISSISSIPPI**

# Texas Made Combs

**When you buy Aluminum Honeycombs be sure that the frame is stamped like this**

**May-1-1917-Pat. No. 1224479**
**Factory A. I.**

THE ALUMINUM HONEYCOMB CO.
OF TEXAS
SAN ANTONIO, TEXAS

**When you see this stamp on the end bar or top bar of an Aluminum Comb it means**

1st. It is made in Texas under the MacDonald patent by the very latest improved machinery.

2nd. The cells are perfect worker size. Count the rows of cells in a Texas Made Aluminum Comb and in a full sheet of foundation.

3rd. The shallow depth of the cell permits a wax extension by the bees which protects the face of the comb and gives an Aluminum Comb the appearance and "feel" of a natural wax comb. These combs are readily accepted by the queen.

4th. The end bars of the frames are channelled out and the Aluminum Comb fitted into them making the Texas Made Aluminum Comb absolutely rigid.

5th. These combs are sold by your dealer under a positive guarantee. Write for descriptive folder giving the name of distributor near you.

## Last Objection Removed

Some had feared that bees would not winter well on Aluminum Combs. Reports from seventeen observers in as many different Northern States and Canadian Provinces show that bees wintered perfectly on Texas Made Aluminum Combs. Because queens could lay eggs in **every cell** these colonies built up faster than bees on wax combs.

**THE ALUMINUM HONEYCOMB COMPANY OF TEXAS**
**SAN ANTONIO, TEXAS**

# Crop and Market Report

Compiled by M. G. Dadant.

For our May report we asked the following questions of our reporters:

1. What percentage of loss in colonies did you have the past winter? 2. In what condition are your colonies at present for bees and stores? 3. What are the honey plant prospects? 4. How much comb and extracted honey on hand? 5. How is honey moving and at what price? 6. Do you anticipate any trouble in selling all your 1921 honey before the new crop is on the market?

## PERCENTAGE OF LOSS

Generally, the country over, the percentage of loss has been very small, owing probably to the mild winter and good condition of bees last fall.

In the New England States the loss has only run from 1 to 6 per cent, and in New York in no instance has the loss reported been over 10 per cent. Throughout the Atlantic States and southeastern section of the United States the loss has been very small, except that we have one report of a loss of 12 per cent from a beekeeper in Florida and one of 50 per cent in Alabama. However, the general losses run between 2 and 6 per cent.

For Texas the loss is also small, running about 4 per cent average, with the highest loss reported as 10 per cent. In Ohio, Indiana and Wisconsin the loss has been ranging from 1 to 5 per cent, whereas in Michigan two or three large beekeepers report an exceedingly large loss. One averages 10 per cent, another 22 per cent. Throughout the State, however especially in the southern part, the losses have not been very great.

The same condition holds good throughout the whole Central West, where the loss has only run from 2 to 5 per cent average. In Colorado the loss is approximately the same, running as high as 10 per cent in one or two instances. Idaho reports a rather larger loss, running as high as 15 per cent, and Utah, also, from 10 to 25 per cent.

Washington seems to have experienced as great a loss as any section of the country, some reports running as high as from 25 to 35 per cent, with Oregon somewhere in the neighborhood of 10 per cent.

California seems to have suffered a loss of between 5 and 10 per cent, with quite a large reduction of bees and brood, owing to the heavy freeze early this spring.

## CONDITION OF BEES AND STORES

Throughout the whole country the condition of bees seems to be excellent, except that in some sections they are a little backward in building up to normal strength.

There is a marked shortage of stores in the East and in the Central West, and some reporters are fearing heavy losses in outyards, owing to the fact that it is impossible for them to go over the terribly muddy roads to reach their bees.

Texas reports bees in excellent condition, although a little late, but this ranks with the same lateness in honey flora, so that it should do no harm. There is danger, unless the amount of stores the bees have is watched carefully after, between May 1 and 20, that the bees may dwindle in the amount of brood they have and suffer as a consequence.

## CONDITION OF HONEY PLANTS

Throughout practically the whole white clover region the condition of honey plants seems to be from fair to extra good, except that Wisconsin reports the clover plants badly killed out last year and prospects only about 50 per cent of normal in many instances. Several other localities report much loss through absence of snow last winter. However, this is being partly made up by the copious rains this spring, which should put the plants that are growing in most excellent condition.

The whole Southwest reports good prospects for honey, with Louisiana the one Southern State which looms big as having prospects 150 per cent of what they were last year. A recent report from there says that there is a regular flood of honey coming in at the date this crop report was written, with prospects for its continuance.

Minnesota is another Northern State which does not expect a very great crop this year owing to the lack of snow and the drought last year.

In Colorado prospects are only fair, with nothing further to report from most of the balance of the Intermountain territory.

California has had excellent rains and our judgment would be, from reports coming in, that prospects are very much above normal.

## HONEY ON HAND

Practically the whole eastern half of the country has disposed of its honey, with very few exceptions. There are probably from three to five cars of extracted honey on hand in Texas, with no comb to speak of. Colorado has both comb and extracted honey left on hand, with the hopes of being able to clean up pretty well before the new crop comes in. Probably Montana is the State which has the largest amount of honey on hand proportionately. They have several cars of comb honey still to dispose of and two or three cars of extracted. However, the producers reporting this seem to feel no uneasiness about being able to move this before the new crop comes in and are still holding comb honey at the same prices as asked last fall. New Mexico and Arizona, which had large crops over from 1920, are practically cleaned up now and those retailing honey are asking a fair price.

## HONEY MOVEMENT

The movement of honey and its sale is very slow throughout the whole country, but stocks in the hands of wholesalers seem to be decreasing so that there should be no large amount held on hand by any of the jobbers and wholesalers in the larger cities. The slow demand makes naturally slow buying on the part of the wholesalers and this accounts for the stock still in the producer's hands.

## AMOUNT OF HONEY LEFT

Comparing with last year, there will be very little honey, indeed, left on hand when the 1922 crop is offered for sale. In fact, we would not be much surprised to note a shortage in some instances, which will be of benefit with the first of the new crop.

One of the largest brokers of honey in California is still offering the different grades in car lots, but with the stipulation that when these are sold there will probably be no more until the new crop comes in. The price is maintained at about what it was two months ago.

## SUMMARY

All in all, the prospects seem to be possibly a little better than average, with bees coming through in a little better shape, and with less loss than the average, but very much shorter in stores.

The old crop of honey will certainly be very well cleaned up, a much different position than the honey market was in a year ago.

This, added to the fact that business conditions in general are improving, and that there is a distinctly stronger demand on the part of European countries for West Indian honey, should work to the advantage of the American beekeeper during the coming season. We do not look for the price of honey to slump very much except on the part of those who want to get rid of their crop just as soon as it is harvested.

# CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 15th of each month preceding date of issue: If intended for classified department it should be so stated when advertisement is sent.

## BEES AND QUEENS

YOUR CUSTOMERS will like Atwater Honey.

CONNECTICUT QUEENS—Highest grade 3-banded Italians, ready June 1. Select untested, $1.25 each; 6, $6.50; 12, $12.00; 50, $47.50; 100, $90. Two lbs. bees with queen, $5.00; 3 lbs. with queen, $7.00. Two-frame nuclei with queen, $5.50; 3-frame with queen, $7.50. Select virgin queens (not culls), 50c each, $45.00 per 100. No disease, and satisfaction guaranteed.
A. E. Crandall, Berlin, Conn.

BEES AND QUEENS at reduced prices. Two-pound packages bees with untested queens, $3.65; 3-pound packages bees with untested queens, $4.55; 2-frame nuclei with untested queens, $3.80; 3-frame nuclei with untested queens, $4.70, in lots of 100 or more. For small lots add 10 per cent. Reference: Security Bank and Trust Co., Wharton, Texas.
W. H. Moses, Lane City, Texas.

"FLORIDA FIRST" QUEENS—Prices, April, May and June: Untested, 1, $1.50; 5, $7. Tested, 1, $2.50; 5, $12. Only "select" queens of bright three-banded Italian stock; healthy, prolific and gentle. Yard located on Merritt's Island and inspected by State Board. No disease in territory. R. C. Boswell Mgr.,
Indian River Apiaries, Wilson, Fla.

QUEENS, QUEENS, from my old leather-back Italian queen. Ready to ship after April 15. She is the head of my apiaries. Untested, $1.25; tested, $2.50; select tested, $3.00. More than 12, prices on application. Guaranteed safe delivery. O. O. Wilder & Son,
Rt. 2, Box 14, Corpus Christi, Texas.

FOR SALE—My 1922 Golden Italian queens and bees, the hustling kind, second to none. They must satisfy or money will be refunded; Price, untested, $1 each, $10 per dozen or $80 per 100; tested, $1.75 each.
E. F. Day, Honoraville, Ala.

TRY ACHORD'S Package Bees and Queens. Price list by return mail.
W. D. Achord, Fitzpatrick, Ala.

100 PER CENT QUEENS, bred from extra select Jay Smith breeder; larger queens from my cell builders reinforced with hatching brood and mated in standard frame nuclei. I guarantee safe arrival and entire satisfaction, and that every queen lays before being caged. Also package bees. I am after a name and reputation. Give me a trial. Select untested, 1, $1.25; 6, $7; 12, $13; 25 to 100, $1 each.
H. Peterman, R. F. D., Lathrop, Calif.

REDUCE EXPRESS CHARGES—Buy nearer home. Two pounds Italian bees with queen on comb of stores, $5.75. Prompt delivery in May. Safe arrival guaranteed. Send for queen circular.
Ross B. Scott, La Grange, Ind.

WE BELIEVED in former years that we had the best Italian queens obtainable. "We still believe it." Mr. H. E. Crowther, Jefferson, Ohio, a large commercial honey producer, writes: "They are fine specimens, indeed, and very resistant to foulbrood." We are making the price this year in reach of all. Untested, $1, select untested $1.25, tested $2, select tested $2.50. We will sell virgins at 50c. We have breeders from Italy, and can furnish either from Americanized or imported stock.
F. M. Russell, Roxbury, Ohio.

WE are now offering our bright Italian queens at $1 each, or 10 per cent less in dozen lots. Pure mating, safe arrival and reasonable satisfaction guaranteed in U. S. and Canada. Write for prices on package bees. We will have them in season.
Graydon Bros., Rt. 4, Greenville, Ala.

PACKAGE BEES, $1.50 per pound; untested Italian or Carniolan queens, $1.25 each. See larger Adv. Free circular. J. E. Wing,
155 Schiele Ave., San Jose, Calif.

DIEMER QUEENS, Liberty, Mo., $1.00 each Guaranteed.

QUEENS, package bees and nuclei. We solicit your advanced orders, large or small, for 1922, and can give you the same prompt service in future as in past. Our early queens in March, ready for your unpacking time, shipped on short notice. Untested queen, $1.50; tested, $3; 2-pound package bees, post paid, $4.80; by express, f. o. b. Sandia, 2-pound package, $3.75; 2-comb regular nuclei, $3.75. Add price of queen wanted; 25 cents less from price on queen with package bees and nuclei; either pure strain golden or three-band.
Dr. White Bee Company, Sandia, Texas.

FOR SALE—Spring delivery, 1922, 2 lbs. bees and young three-banded Italian queen, $5. Special price on 2-lb. queenless packages. Health certificate with each shipment. Satisfaction guaranteed.
J. L. Leath, Corinth, Miss.

BEES—100 colonies for sale.
E. F. Atwater, Meridian, Idaho.

GOLDEN QUEENS, GOLDEN—1922 price: untested, one, $1.25; doz., $12. Select untested, one, $1.50; doz., $15; tested, one, $2.50, doz., $27.50. Pure mating and safe arrival guaranteed in United States and Canada. Booking orders now.
Tillery Bros., Georgiana, Ala.

FOR SALE—Early package bees, nuclei and queens. Shipping season from March 1 to June 1. We handle 1,800 colonies. No disease. Loveitt Honey Co.,
602 N. 9th Ave., Phoenix, Ariz.

NUCLEI and Cypress hives for 1922 delivery—Three-frame black or hybrid bees, Italian queen, $5.00; 3-frame Italian bees and queen, $5.50; 3-frame black bees and queen, $4.00; 3 pounds black bees and Italian queen on comb of honey, $5.50. Cypress hives complete; 5 10-frame, $12. Full depth supers complete, five 10-frame, $7. Prices on other sizes upon request. I own the timber and manufacture the hives, with no middlemen involved. Book orders now, so you can name shipping date to suit yourself. One-third with order to guarantee acceptance. Reference: Toombs County Bank, Lyons, Ga. Good farm for sale cheap.; 660 acres. Terms to suit purchaser. Otto Diestel, Elza, Ga.

BEES in 2-pound packages, our specialty for 1922. Now booking orders See ad elsewhere for prices. Caney Valley Apiaries
J. D. Yancey, Mgr., Bay City, Texas.

HARDY ITALIAN QUEENS, $1 each.
W. G. Lauver, Middletown, Pa.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

TWO-POUND PACKAGES 3-banded Italian bees with queens, $4.75 each; 10 or more, $4.50 each; 25 or more, $4.25 each. Heavy discounts on packages after May 25.
J. J. Scott, Crowville, La.

HEAVY LAYING QUEENS—High-grade Italians, bred for honey production; vigorous, prolific, disease resistant, hustlers and gentle. They are guaranteed to please. Untested, $1.15; selected, $1.50; tested, $2. Perfect satisfaction and safe delivery in U. S. and Canada.
Ulis Blalock, Christine, Texas.

ITALIAN BEES, 40 colonies; 10-frame dovetailed hives, 80 full-depth extracting supers, $400. W. C. Campbell, Grant City, Mo.

BEES, QUEENS AND NUCLEI—See our ad. on page 226. Tupelo Honey Co.

AM OFFERING May, 1922, delivery: One 3-frame nucleus, containing 1 guaranteed pure Italian queen, 3 frames emerging brood, and about 2 pounds black and hybrid bees for $5. One 2-frame nucleus, as above, $3.50. One 1-frame nucleus, as above, $2.65. One select untested Italian queen, $1.25. One select tested Italian queen, $2. On the above stock safe arrival and satisfaction guaranteed. Correspondence respectfully invited.
Carl L. Wilson Apiaries, Mount Vernon, Ga.

DEPENDABLE QUEENS—Golden or three banded, after July 1: One, $1.50; six, $8; dozen, $15. Safe arrival and satisfaction guaranteed. Card brings circular.
Ross B. Scott, LaGrange, Ind.

FOR SALE—May 1 delivery—200 hybrid nuclei, 2-frame, $3; 3-frame, $4.25; with golden queen, $1.50 extra.
James Johnson, Pocahontas, Ark.

YOUR MONEY'S WORTH or your money back. Williams' queens of quality are good; we know it. Let us prove it to you. They have pleased many. Write for free circular. Pure mating, safe arrival and satisfaction guaranteed. Select untested, $1.25; tested, $2.00.
P. M. Williams, Ft. Deposit, Ala.

FOR SALE—30 colonies bees in 10-frame hives spaced 9 frames to the hive, shipment to be made about June 1, as soon as unpacked. Also write for our catalog of bee supplies and price in large quantities.
F. J. Rettig, Wabash, Ind.

SPECIAL PRICES on queens and bees. See my ad on page 191.
Frank Bornhoffer, Mt. Washington, Ohio.

LATHAM'S QUEENS are well-bred Italians. Prices for period of May 15 to June 15, $2 each; 10 or more, $1.75 each.
Allen Latham, Norwichtown, Conn.

FOR SALE—Golden Italian queens, untested, $1.15 each; 6, $6.50; 12 or more, $1 each; select untested, $1.60; 6 or more, $1.50 each. Safe arrival. Hazel V. Bonkemeyer,
R. D. 2, Randleman, N. C.

THREE-BANDED ITALIAN QUEENS—Select untested, $1 each, $9 per dozen; 1-lb. package with queen, $3; 2-lb. package with queen, $5. Safe arrival and satisfaction guaranteed.
W. T. Perdue & Sons, Rt. 1, Ft. Deposit, Ala.

SWARTS' AMERICAN GOLDEN QUEENS produce golden bees of highest quality. Untested, $1.50 each, 6 for $8.00; tested, $3.00. Satisfaction guaranteed.
D. L. Swarts, Rt. 2, Lancaster, Ohio.

TRY my Caucasian or Italian 3-frame nuclei at $6 each, with tested queen; with untested queen, $5.50 each. Tested queens, $1.50 each; untested, $1.25 each. Delivery by return mail. No disease.
Peter Schaffhauser, Havelock, N. Car.

TWO-POUND PACKAGE BEES with untested Italian queen, $4.95; 3 pounds, $6.95. Safe delivery guaranteed.
C. H. Cobb, Belleville, Ark.

A REAL BARGAIN—A two-pound package of hybrid bees, $2.75 each; 10 or more, $2.50 each; 3-lb. package, $3.25; 10 or more, $3 each. Add $1 per package for untested Italian queen. This is a real saving to any purchaser, as colony will rapidly Italianize. Queens purely mated as is possible. Of best Italian stock. Ten per cent books your order. No disease, safe delivery and satisfaction guaranteed.
Brazos Valley Apiaries,
H. E. Graham, Prop., Gause, Texas.

QUEENS—We are prepared to furnish queens in quantities promptly. These queens are reared for us by the most reliable breeders. Write for prices.
Dadant & Sons, Hamilton, Illinois.

QUEENS AND PACKAGE BEES—Bright, 3-banded Italian. We are now booking orders for the season of 1922. Shipments of queens and package bees this year commenced on March 15. All queens are mated in standard full-sized nuclei. We operate four thousand full-sized nuclei. Capacity and output of queen yards this season, five thousand queens per month. We own, operate and run for extracted honey in the States of California and Nevada twelve thousand colonies of bees. All of our breeders are selected queens whose colonies led these twelve thousand colonies of bees last season. Better selection of breeders cannot be equaled or had anywhere. We have the capacity and output of queens and package bees to make shipments promptly as and when promised. We guarantee safe arrival of queens and package bees. Prices: Mated, untested queens, 1, $1.00; 6, $5.50; 12, $9.60; 13 to 99, 75c each; 100 or more, 70c each. Package bees: Write for special price. Terms, 10 per cent deposit on booking order, balance at time of shipment. See our large advertisement in this magazine. Western Bee Farms Corporation (Principal); Western Honey Corporation and Western Citrus Honey Corporation (Associated Corporations); Claus Spreckels Building, No. 703 Market St., San Francisco, Calif.

CAN FURNISH PROMPTLY 2-frame nuclei, with queen, $3.50; 3-frame nuclei, with queen, $4.50; 4-frame nuclei, with queen, $5.50.
Rosedale Apiaries,
J. B. Marshall & H. P. LeBlanc, Props.,
Route No. 2, Alexandria, La.

HIGH GRADE ITALIAN QUEENS a specialty. Order early. Prompt shipment. Laying, $1.50; tested, $2.50; day-old, with introduction guaranteed in the U. S., 75c.
James McKee, Riverside, Calif.

FOR SALE—Italian queens. Prices for untested, in June, $1.50 each, $8.25 for 6; $16 for 12. Tested, $2.50 each; from July 1 to October, untested $1.25 each, $7 for 6; $13.50 for 12; tested, $2 each. Virgins, 75c each. Mismated queens will be replaced if returned in 30 days. Dead queens will be replaced if returned to me by return mail.
R. B. Grout, Jamaica, Vt.

FOR SALE—50 colonies Italian bees, priced right. Geo. C. Ableson, Fredonia, Kans.

FOR SALE—Golden Italian queens; tested, $2.50; untested, $1.25. Queens ready June first. J. F. Michael,
Route 1, Winchester, Ind.

FOR SALE—100 or less colonies of bees in 8 or 10-frame hives. for delivery before June 1. W. A. Hunter,
119 S. 3rd St, Terre Haute, Ind.

ITALIAN QUEENS—Three-banded, select untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness, and perfect markings. Price, May and June: $1.50 each, 12 or more $1.25 each. Send for circular.
J. H. Haughey Co., Berrien Springs, Mich.

1500 NUCLEI for May and June. Simmons' queens ready now.
Fairmount Apiary, Livingston, N. Y.

SPICER'S 3-band Italian queens ready to mail May 20. If you are interested in improving your stock and getting larger returns from your bees, head your colonies with these queens. Untested, $1.25 each, 6, $7; 12, $13.50. Tested, $2.50 each.
Robert B. Spicer, Wharton, N. J.

FOR SALE—Leather colored Italian queens, tested, until June 1, $2.50; after, $3. Untested, $1.25; 12, $13. Root's goods at Root's prices. A. W. Yates,
15 Chapman St., Hartford, Conn.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested $2.50; six or more, 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

FOR SALE—400 stands clean bees, extracting equipment; good location; for reason write. The Oregon Apiary Co.,
Nyssa, Oregon.

ITALIAN BEES—Full colonies with Italian queen, $15; two for $25. Three-frame nucleus with queen, $6.50. Three-pound package with queen, $6.50. No disease. Safe arrival and satisfaction guaranteed.
Van's Honey Farms,
Van Wyngarden Bros., Props.
Hebron, Ind.

SEE Thagard's back to Pre-War days prices on queens and bees elsewhere.

"ACE-HIGH" three-banded Italians hustle. Bred from excellent stock. No effort or expense spared to produce quality. No disease. Prices reasonable. Send for descriptive circular *now*, before you forget.
A. G. Van Ronzelen,
Route 2, Box 212, San Antonio, Texas.

THREE-BANDED ITALIANS ONLY—Untested $1.25 each, $12 per dozen; tested queens $2 each, $20 per dozen. 2-frame nuclei, with untested queen, $4.50.
Jul. Buegeler, New Ulm, Texas.

UNSURPASSED ITALIAN QUEENS, ready June 1: Untested, 1, $1.25; 6, $7; 12, $12.50; 50, $50; 100, $95. Tested, 1, $2; 6, $11. Every queen is mated and laying before she is mailed.
J. D. Harrah, Freewater, Ore.

FOR SALE—Golden Italian queens; untested, about May 1: 1, $1.15, 6 for $6.50; 12 or more, $1 each; tested, $2 each; select tested, $3 each. No disease. No bees for sale.
D. T. Gaster, Rt. 2, Randleman, N. C.

CARNIOLAN QUEENS—None better. Select tested, $2.50 each; select untested, $1.25 each. Also choice Italians, same prices. Send for circulars.
Geo. W. Coltrin & Son, Mathis, Texas.

PINARD'S QUALITY BRAND QUEENS are the convincing kind. A. J. Pinard,
440 N. 6th St., San Jose, Calif.

SELECT ITALIAN QUEENS ONLY—Tested, $2.50 each; untested, $1.25 each. Satisfaction guaranteed. Send for circular. Also have choice Italians, same prices.
Geo. W. Coltrin & Son, Mathis, Texas.

ELTON WARNER'S QUALITY QUEENS—Progeny of his famous Porto Rican breeding stock. Write for illustrated price list.
Elton Warner Apiaries, Asheville, N. C.

QUEENS—3-banded Italian; also golden; the thrifty kind. Untested, $1.50; 6, $7.50; 12, $13.50; tested, $2.50; 6, $13; 12, $24.50; select tested, $4; 6, $22; 12, $41.50. Write for prices after July 1. No disease. Safe arrival and satisfaction guaranteed.
P. O. Watkins, Cullasaja, N. C.

BY RETURN MAIL—Tested queens by return mail, $2.50 each; reared last fall from our well known strain of three-banded Italians; none better. Uutested queens ready to mail April 15, $1.50, $13.50 per dozen. Safe arrival and satisfaction guaranteed; also no disease ever in this locality. J. W. K. Shaw & Co.,
Loreauville, La., Box 72.

PACKAGE BEES—Italian or Caucasian queens bred for heavy production. Safe arrival guaranteed. Prices on application.
Sarasota Bee Co., Sarasota, Fla.

TRY PINARD—He's the one that breeds for quality. Root's strain. Attractive prices. See larger ad. A. J. Pinard,
440 N. 6th St., San Jose, Calif.

LARGE, HARDY, PROLIFIC QUEENS—Three-band Italians and goldens. Pure mating and safe arrival guaranteed. We ship only queens that are top-notchers in size, prolificness and color. After June 1, prices as follows: Untested $1.25 each, 6 for $7; select untested $1.50 each, 6 for $8.50; select tested $3 each. Special prices on larger quantities. Queens clipped free on request. Health certificate with each shipment.
Buckeye Queens, Zoarville, Ohio.

## SWEET CLOVER SEED

YOUR CUSTOMERS will like Atwater Honey.

HUBAM CLOVER SEER—Guaranteed purity; grown by ourselves; certificates of purity and germination furnished. 1 lb, $1.; 5 lbs., $4.50; 25 lbs., $21.25; delivered prices. Write
The Foster Honey Co., Boulder, Colo.

BIENNIAL SWEET CLOVER SEED in the hull at 5c per pound, or 5 pounds postpaid for $1. Sow a little and get it started around each apiary.
Stover Apiaries, Mayhew, Miss.

## HONEY AND BEESWAX

YOUR CUSTOMERS will like Atwater Honey.

FOR SALE—White clover honey in 60-lb. cans, at 12c per pound. Same honey in 5-pound pails at $10 per dozen, f. o. b. Waterville, Ohio.
F. W. Summerfield, Waterville, Ohio.

FOR SALE—100 cases of 6 10-lb. pails each, and 23 cases 12 5-lb. pails each (60 lbs. net) of choice white alfalfa-sweet clover honey at $6.60 per case, in 10 case lots and upwards only. Sample 25c; all f. o. b. Montrose, Colo.
H. R. Fisher.

HONEY FOR SALE—In 60-lb. tins, water white orange, 15c; white sage, 13c; extra light amber sage, 11c; New York State buckwheat, 10c, for immediate shipment from New York.
Hoffman & Hauck, Inc., Woodhaven, N. Y.

HONEY—Atwater sells fine alfalfa-clover honey, extra strong cases, case of two 60-lb. cans, $12; case of twelve 5-lb. pails, $7.80, all f. o. b. here. Ten-lb pails all sold out; plenty of the others on hand.
E. F. Atwater, Meridian, Idaho.

FOR SALE — White and amber extracted honey; also comb honey. Write for prices. State quantity wanted.
Dadant & Sons, Hamilton, Illinois.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

## SUPPLIES

YOUR CUSTOMERS will like Atwater Honey.

FOR SALE—Hoffman shallow extracting frames, brand new, in original boxes of 100, $3.00. Bert Willard, Plainview, Ark.

GIVE YOUR PACKAGE BEES a set of drawn worker brood combs to boost them. Several hundred at 30c each; no disease. Fresh supply of Airco foundation. State quantity needed and ask for price. Still have some clover honey. C. S. Engle.
1327 23rd St., Sioux City, Iowa.

REXFORD O. K. Push-in comb introducing cage, 35c, 3 for $1. See larger advertisement in April number.
O. S. Rexford, Winsted, Conn.

COMBS drawn from Dadant's medium brood foundation last year; no foulbrood or moths, 35c each, 10 for $3.25. Eugene Richards,
202 West 8th St., Seattle, Wash.

WRITE FOR PRICES on slightly used 8-frame hives, excluders, section supers, extracting supers with comb; no disease.
Carl Frank, Jr., Mauston, Wis.

WESTERN BEEKEEPERS—We can demonstrate that you can save money on buying bee supplies of best quality. Write for our latest price list.
The Colorado Honey Producers' Association,
Denver, Colo.

HAVE YOU any Bee Journals or bee books published previous to 1900 you wish to dispose of? If so send us a list.
American Bee Journal, Hamilton, Ill.

## FOR SALE

YOUR CUSTOMERS will like Atwater Honey.

FOR SALE—Two locations, about 500 colonies bees in good cypress and white pine 10-frame hives. Am moving to another part of the state. R. H. Fryer, Sumatra, Fla.

FOR SALE—About 40 cases of second hand 60-lb. honey cans; are as good as new, only once used; 2 cans to case, boxed, at 50c per case, f. o. b. Chicago. Some 10-lb. cans will sell cheap. J. K. Wolosevich,
1831 W. Grand Ave., Chicago, Ill.

FOR SALE—New Beeman garden tractor. Will trade for bees.
O. G. Mills & Sons, Bayfield, Wis.

FOR SALE—A few hives of bees; also hives and supers, 8 and 10-frame, cheap.
P. Greenwall, 467 Second St., Elmhurst, Ill.

FOR SALE—Fifteen 10-frame white painted supers. O. Biermann, Malcolm, Iowa.

FOR EXCHANGE OR SALE—Fully equipped printing press; lot supplies, $35; typewriter, A-1 condition, $22.50; Encyclopedia, 12 vol., $12.00; Winchester 32-20 repeater, $12.50. Trade for standard bee supplies.
H. D. Lacey, Station A, East Liverpool, O.

FOR SALE—Hammond typewriter, practically new; cost $100. Will sell it for $50.
Mrs. C. C. Miller, Marengo, Ill.

ROBBING PREVENTED or stopped. J. A. B. entrance guards do the trick. Return mail, one $1. John A. Bloomgren,
Ridgway, Pa.

FOR SALE—Modern standard make typewriter, $50; or will trade for bees, queens, honey, or offer. Mrs. Ida Harris,
Box 707, Tuscaloosa, Ala.

SURPLUS SALE—10 frame bodies (cypress) flat, 1 power saw frame complete, 3 oil burners, old Bee Journals, hunting magazines, taxidermy books, typewriter, No. 3 folding camera, 1 feed grinder, 1 big game rifle, guns, revolvers, pointer dogs, clay pigeons, etc.; Buff Orpington eggs for hatching. Complete description furnished and priced to move.
G. M. Withrow, Mechanicsburg, Ill.

FOR SALE—Good second-hand 60-lb cans, two cans to a case, boxed, at 60c per case f. o. b. Cincinnati. Terms cash.
C. H. W. Weber & Co., 2163 Central Ave,
Cincinnati, Ohio.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

## WANTED

YOUR CUSTOMERS will like Atwater Honey.

WANTED—One ton of white honey, either white clover, or clover and milkweed, or raspberry and milkweed, or milkweed and willow herb. A blend of any of the above with clover honey will do. Wm. C. Brown,
809 Maple St., Battle Creek, Mich.

WOULD LIKE TO BUY some more good honey, some beeswax and also maple syrup. Paul Thomae, 1156 Thi 3t., Milwaukee, Wis.

WANTED—Honey, section, bulk comb and extracted. Elton Warner, Asheville, N. C.

WANTED—Honey, section, bulk comb and extracted. W. A. Hunter, Terre Haute, Ind.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

WANTED—We have many calls from educators for copies to complete their files of the older Bee Journals. If you have complete volumes or miscellaneous numbers of any Bee Journals previous to 1900, write us, giving a list, and we will be glad to quote a price. Old bee books, now out of print, are also desirable. We act as a clearing house for this kind of materials.
American Bee Journal, Hamilton, Ill.

## SITUATIONS

YOUR CUSTOMERS will like Atwater Honey.

WANTED—Employment in British Columbia beeyard; one season's experience with one of the best Ontario beekeepers. Experience rather than high wages wanted. Apply,
C. W., care American Bee Journal.

WANTED—Farm hand to help with bees, $30 per month.
Frank Moore, Newaygo, Mich.

WANTED—Man to work coming season in our apiaries. State age, experience and wages wanted in first letter; also give reference. The Rocky Mountain Bee Co.,
Box 1319, Billings, Mont.

WANTED—Situation by energetic and industrious young man who wishes to take up bee culture. Would like to work for board and room where a large apiary is kept. State number of colonies.
J. W. O., P. O. Box 344, Eureka, Calif.

WANTED—A partner to manage an established bee business, 1,200 colonies, 3 apiaries. Healthy location and convenient. Must have some capital. Or may let on shares the first year. References exchanged. W. B. Gehrels,
Box 27, Puntarenas, Costa Rica,
Central America.

WANTED—Man for comb honey production. State age, wages expected, and experience.
B. F. Smith, Jr., Fromberg, Mont.

WANTED—One experienced man, and students or helpers, in our large bee business; good chance to learn. Modern equipment and outfit, including auto truck; located near summer resorts. Write, giving age, height, weight, experience, reference and wages wanted.
W. A. Latshaw Co., Clarion, Mich.

## REAL ESTATE

YOUR CUSTOMERS will like Atwater Honey.

FARM WANTED—Want to hear from owner of a farm for sale, for fall delivery. Give lowest price. L. Jones, Box 551, Olney, Ill.

## MISCELLANEOUS

YOUR CUSTOMERS will like Atwater Honey.

WILL EXCHANGE package bees for Barnes' beehive and frame outfit.
Tupelo Honey Co., Apalachicola, Fla.


## ACHORD'S ITALIANS ARE GOOD BEES

Whether you have only a few colonies or five hundred, we believe you will like them, and they will prove a worthy addition to your yard. They are a bright, hustling, three-banded strain, bred primarily for honey-production, but also for gentleness and color. We have spared neither labor nor expense to make them the very best. We begin shipping about April 15.

**Price of Packages, April and May, F. O. B. Shipping Point, by Express**

1-lb. pkg. $2.25; 25 or more, $2.15; 50 or more $2.00
2-lb. pkg. $3.75; 25 or more, $3.50; 50 or more, $3.35
3-lb. pkg. $5.25; 25 or more, $5.00; 50 or more, $4.85
Add price of queen wanted to package price above.

**Price of Queens, April and May**

Untested, each----------$1.25; 10 or more, $1.15; 25 or more, $1.00
Select untested, each-----$1.35; 10 or more, $1.25; 25 or more, $1.15
Tested, each ----------$2.00; 10 or more, $1.75.
Safe arrival and satisgaction guaranteed.

**W. D. ACHORD, FITZPATRICK, ALA.**

## ITALIAN QUEENS AND BEES

When you want quality, disease-resisting, and honey gatherers, why not Root's strain that has been tested out for over 50 years. I am prepared to take care of your wants. Small or large orders will receive my prompt attention. Quality, service and satisfaction is my motto. Remember, you get what you order, with a guarantee backed by years of experience.

**Prices to July 1.**

| | 1 | 12 | 100 |
|---|---|---|---|
| Untested queens ---------- | $1.25 | $13.80 | $90.00 |
| Select untested ---------- | $1.60 | | |
| Tested ---------- | $2.00 | | |
| Select tested ---------- | $2.40 | | |

After July 1, 10 per cent discount. Write for circular.

**A. J. PINARD, 440 N. Sixth Street, San Jose, Cal.**

BACK TO PRE-WAR DAYS

## THAGARD ITALIAN QUEENS BRED FOR QUALITY

In reducing our prices to pre-war days we realize that you are receiving pre-war prices for your honey, and cannot afford to pay war prices for your queens.

Although we have reduced our prices, we are going to give you the same high quality queens, queens that have pleased thousands of beekeepers in the past, and queens that will please you. Test some of them out. If after giving them a fair chance you are not satisfied with the results, we will return your money or give you another queen. Our leather colored, 3-bands will stand the test. Catalog free.

Untested, 1 to 12, $1 each; 12 to 49, 95c each; 49 to 99, 85c each; 100 or over, 80c each.

If you want untested queens, bred from any special breeder we have, the price will be:
1 to 5, each $1.50; 5 to 12, each $1.10; 12 to 50, each $1.

Italian bees with Italian queen: 1-lb. package, $3; 2-lb. package, $5.

**THE V. R. THAGARD CO., Greenville, Ala.**

QUEENS
Bright Three-Banded Italian

# PACKAGE BEES

QUEENS
Bright Three-Banded Italian

We are now booking orders for queens and package bees for the season of 1922.
Shipments of queens and package bees this year commenced on March 15, 1922.
All queens are mated in standard full-sized three-frame nuclei.
We are operating four thousand standard full-sized three-frame nuclei.
Capacity and output of queen yards this season is five thousand queens per month.
We own, operate and run for extracted honey in the States of California and Nevada twelve thousand colonies of bees. All of our breeders are selected queens whose colonies led these twelve thousand colonies of bees last season. Better selection of breeders cannot be equaled or had anywhere.
We have the capacity and output of queens and package bees to make shipments promptly as and when promised.
All queens shipped by us in six-hole mailing cages. No small-sized mailing cages used.
We guarantee safe arrival of queens and package bees. Any queens or package bees arriving dead at destination will be replaced without charge.

PRICES AND TERMS
MATED—UNTESTED—QUEENS

| | |
|---|---|
| 1 | $1.00 |
| 6 | 5.50 |
| 12 | 9.60 |
| 13 to 99 | 75c each |
| 100 or more | 70c each |

PACKAGE BEES
Write for Special Price.

TERMS:
10 per cent deposit on booking order. Balance at time of shipment.

References, by permission: The A. I. Root Company, of California, No. 52 Main St., San Francisco, Calif, and No. 1824 East Fifteenth St., Los Angeles, Calif; The Diamond Match Company, Apiary Department, Chico, Calif.; The Western Honey Bee, No. 121 Temple St., Los Angeles, Calif.; Bees and Honey, Hutchinson Building, Oakland, Calif.; The Beekeepers' Review, Lansing, Mich.
Banking reference on request. We respectfully solicit your patronage.

## WESTERN BEE FARMS CORPORATION
(PRINCIPAL)

**Western Honey Corporation** **Western Citrus Honey Corporation**
(ASSOCIATED CORPORATIONS)

**General Offices: Claus Spreckels Building, No. 703 Market St., San Francisco, Cal.**



3000 MONTHLY CAPACITY

# 65c
EACH
## UNTESTED QUEENS

PROMPT SHIPMENT

In order to keep working at full capacity we are making a big cut in the price of

## FOREHAND'S THREE-BANDS
**The Thrifty Kind**

Thirty years of experience go into the rearing of our queens. Select breeding for over a quarter of a century brings them up to a standard *surpassed by none, but superior to many.*

We guarantee pure mating and satisfaction the world over. Safe arrival guaranteed in the United States and Canada.

For the balance of the season we are selling bees in combless packages only.
We have several thousand queens ready for shipment. Send in your order at once.

UNTESTED QUEENS EACH

1, $1.00; 6 to 11, 95c; 12 to 49, 90c; 50 to 99, 85c; 100 to 249, 80c; 250 to 499, 75c; 500 to 1,000, 65c.

Prices quoted on other grades upon application.

POUND BEES

One 1-pound package, $2.00; 25 and over, $1.90
One 2-pound package, $3.50; 25 and over, $3.25
One 3-pound package, $5.00; 25 and over, $4.75

Catalog sent free.

**W. J. Forehand & Sons, Fort Deposit, Alabama**

DON'T DELAY—Get our Prices and we'll get Your Order

# WE SAVE YOU MONEY

## "falcon"

*Supplies, Queens, Foundation*

**W. T. FALCONER MFG. COMPANY, Falconer, (NEAR JAMESTOWN) N. Y., U. S. A.**

*"Where the BEST Beehives come from"*

# We are Prepared to Take Care of your Rush Orders

We ship thousands of pounds of bees all over the U. S. A. and Canada.

Special attention given to small orders.

Queens bred from the best honey gatherers with all other important points taken into consideration.

Safe arrival guaranteed.

Send for special circular for shipping after May 15th. Can take care of your rush orders for shipping before May 15 at the following prices:

1-lb. package, $2.25 each; 25 or more, $2.15 each.
2-lb. package, $3.75 each; 25 or more, $3.60 each.
3-lb. package, $5.25 each; 25 or more, $5.00 each.
2-frame nuclei, $3.75 each; 3-frame nuclei, $5.25 each.
2-frame, with 1 pound extra bees, $5.25 each.
1-frame, with 2 pounds extra bees, $5.25 each.

Add price of queen wanted when ordering packages.

## NUECES COUNTY APIARIES, Calallen, Tex.

**E. B. Ault, Prop.**

**BARNES' FOOTPOWER MACHINERY**

Read what J. E. Parent, of Chariton, N. Y. says:

"We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work."

**W. F. & JOHN BARNES CO.**
**995 Ruby St., ROCKFORD, ILL.**

Our Honey Labels are Good Labels. Send for Catalog.
American Bee Journal, Hamilton, Ill.

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**THIS IS THE "SIGN" ON EACH CYPRESS BOARD**

S C No. of Mill M A

TRADE MARK REG. U.S. PAT. OFFICE

**DON'T GUESS MAKE SURE. 'HAVE A LOOK'**

For all uses that invite decay (for instance, bottoms) demand

**"ALL-HEART"**

***"Tidewater" Cypress***

"THE WOOD ETERNAL"

The "arrow" on the end of each board identifies the genuine product of the cypress mills whose CHARACTER of timber, methods of manufacture, and complete responsibility enable them to be members of the Association.

THIS FACT IS YOUR PROTECTION.

ACCEPT NONE BUT TRADE-MARKED "TIDEWATER" CYPRESS

**SOUTHERN CYPRESS MANUFACTURERS' ASSOCIATION**

1251 Poydras Building, New Orleans, La., or 1251 Graham Building, Jacksonville, Fla.

Insist on TRADE-MARKED Cypress at Your Local Lumber Dealer's — If he hasn't it, LET US KNOW

# JUST OFF THE PRESS

## A NEW EDITION

**LANGSTROTH ON THE HONEYBEE**

¶ This book regarded by many as the most important contribution to the literature of beekeeping has again been revised and brought up-to-date by C. P. Dadant.

¶ The style of the book has been entirely changed. The page is larger, a frontispiece in color is included and many new illustrations have been added.

¶ This book containing the best from the lifework of three widely known apiarists—Langstroth, Chas. Dadant and C. P. Dadant should be in the library of every up-to-date beekeeper.

¶ 448 large pages, durable cloth binding.

Postpaid $2.50.

**AMERICAN BEE JOURNAL, Hamilton, Illinois**

# OVER 200 MILES
## OF PURE SHEETED BEESWAX

**Was Made into Airco Foundation and Sold During the Single Month of March, 1922**

### Over 27 Tons was made and sold from Medina

You can judge for yourself as to why Airco has made such a wonderful record, and has caused this unprecedented demand. Ask the man who uses Airco.

### HERE IS A SCIENTIFIC FACT THAT WILL INTEREST EVERY BEEKEEPER

Authorities have estimated that it takes about 15 pounds of honey to produce one pound of beeswax such as is used in making foundation. In other words, if the bees have to draw out combs without having full sheets of foundation to start on, they consume about 15 pounds of honey for each pound of wax produced in comb-building. If given comb foundation to work upon, this much honey may be saved per pound of foundation used.

Can any beekeeper afford to go without full sheets of foundation in his supers after knowing the above fact?

**It will pay you well to save the bees' time and energy by getting Airco Foundation—the only foundation made which has the perfect cell base.**

### OUR NEW INDESTRUCTIBLE COMBS

For years we have been experimenting on non-sagging indestructible wax foundation. Our experiments have included wires incorporated in the comb foundation, foundation with wire-cloth base, as well as foundation having a base of thin sheet metal, celluloid, cloth, bakelite, cardboard, fibre and wood veneer. So far, the wood-base foundation is away ahead of anything else we have tried out. Made up with the thin top-bar frame, allowing for two full rows of added cell-space, these combs allow from 20 per cent to 25 per cent more worker brood area, as no drone comb is made on these combs. Sagging is impossible.

We are now in position to furnish beekeepers with a few frames with this foundation for experimental purposes. Supplied only in thin top-bar frames, ready for use, at 50c each, or $5 for 10. For the present season we will not be able to supply more than 10 frames to any one beekeeper, as we are already far behind on orders.

We would like the opinion of beekeepers on this new product.

# THE A. I. ROOT CO., MEDINA, OHIO

**52 Years in the Bee Supply Industry.**

New York
Chicago
Philadelphia
St. Paul
Indianapolis
Norfolk
New Orleans
Syracuse
Council Bluffs
San Antonio
Subsidiary Companies